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ABSTRACT

The purpose of the basic skills component of this project was to improve the reading and mathematics skills of 2085 junior high school and middle or extended elementary school students who were assigned to transition teachers for help. The target population for the Mathematics Teacher Resource Development consisted of teachers who (1) needed further training for certification as mathematics teachers, (2) needed to upgrade their skills, or (3) were potential mathematics teachers who might be recruited to teach in the schools. In the basic skills component, teachers, using criterion-referenced tests, were to determine and record areas in which students needed extra help. An individualized program was to be established for students, and extra instructional materials would be supplied. The Mathematics Teacher Resource Development was set up to implement teacher training and upgrading in mathematics by providing inservice and college level courses. This final report on the project includes agreements and discrepancies between intended and observed outcomes for each stated objective of the project. Appendices include samples of the evaluation instruments and charts displaying evaluation results. (JD)

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IMPROVING BASIC SKILLS IN READING AND MATHEMATICS

FINAL EVALUATION REPORT E.C.I.A CHAPTER 2

SEPTEMBER 1985

FLORETTA D. Mc KENZIE
SUPERINTENDENT OF SCHOOLS

SP 026964

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PUBLIC SCHOOLS OF THE DISTRICT OF COLUMBIA

IMPROVING BASIC SKILLS IN READING AND MATHEMATICS

FINAL REPORT

1984-1985

Prepared by

Division of Quality Assurance

1984-1985

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SUMMARY AND FINDINGS

Title

Improving Basic Skills in Reading and Mathematics

Project Coordinators

Vivian Carson, LaVerne Glascoe and Gwendolyn Means

Project Location

Although the project office was in the Instructional Services Center at Langdon School, classes for Basic Skills were located in all junior high and selected middle and extended elementary schools in the District of Columbia Public Schools (DCPS), while courses for Mathematics Teacher Resource Development were offered in various schools and centers throughout the district.

Target Population

The target population for the Basic Skills portion of the project consisted of seventh, eighth and ninth grade students in the junior high school transition program. The target population for the Mathematics Teacher Resource Development portion consisted of teachers of mathematics in the DCPS who were not certified as probationary or permanent mathematics teachers, those preparing to teach mathematics and those teaching mathematics who were minimally qualified.

Background

The original Basic Skills grant in 1980 was funded under ESEA Title II, Part B and concentrated on life skills of high school students, especially in the areas of verbal and written communication and math/money management. This program was superseded by the Education Consolidation and Improvement Act (ECIA), Chapter 2, Sub-Chapter A in 1982, with the emphasis shifting to the junior high school level for the strengthening of achievement in reading and mathematics, and to undertrained mathematics teachers throughout all levels. During the first year of the project, an attempt was made to establish Basic Skills Centers in all junior high and middle schools. When that did not prove feasible, the Basic Skills portion of the project shifted to providing training, materials and monitoring for transition teachers and their classes to supplement their program in the 1984-85 school year. Transition teachers generally worked with students who were two or more years below grade level and who needed extra help in order to reach the CBC objectives necessary to proceed to the next grade.

The Mathematics Teacher Resource Development portion of the project was deemed necessary to address the problems of the increasing decline in student mathematics scores, the occurrence of untrained mathematics teachers and the

decline of persons entering the teaching field. These facts were found in studies throughout the United States, as well as in the DCPS, and summarized at the National Convocation on Pre-college Education in Mathematics and Science, held on May 12th and 13th, 1982. This led to the application for ECIA Chapter 2 funding to plan a program that would help alleviate the problem in the DCPS. During the first year of the project, planning was completed, a symposium was held, proposals for additional funds were written and staff development/credit courses were taken by 167 teachers with 92 enrolled in the mathematics certification program.

Description of Project

For the Basic Skills portion, identified students were to receive extra help in reading and mathematics, with their individual needs determined through criterion-referenced tests. Special management and recordkeeping systems were to be used with extra instructional materials provided as well as technical assistance. For the Mathematics Teacher Resource Development portion, a plan was developed to upgrade mathematics teachers' skills (concentrating on mathematics teachers who do not hold certification in their field) with courses through cooperation with local universities as well as the DCPS Mathematics Department. Teachers taking the courses would be able to demonstrate the skills they acquired.

Stated Objectives

A: At least two-thirds of the junior high transition students who are in the classes of junior high transition teachers and who receive reading and/or mathematics instruction during the 1984-85 year in the Improving Basic Skills in Reading and Mathematics program, will acquire proficiencies in the majority of the skills in which they were found to be deficient, as measured by a criterion referenced test, and will improve those skills at a greater rate than previously as measured by a standardized test.

B: By June 1985, after receiving the Improving Basic Skills in Reading and Mathematics program's staff development, instructional materials and instructional support from assistant directors of Reading and Mathematics, at least 80% of the project teachers will demonstrate their ability to work with skill-deficient students, as measured by an observation checklist, questionnaires and a sampling of Levels-of-Use interviews.

C: As a result of participation in the Mathematics Teacher Resource Development component of the Improving Basic Skills in Reading and Mathematics program, project teachers needing mathematics certification will complete an average of three courses toward their certification.

D: As a result of participation in staff development events through the Mathematics Teacher Resource Development component of the Improving Basic Skills in Reading and Mathematics program, project teachers of mathematics pre K-12, will improve their competencies in classroom management, planning and content.

Evaluation

The evaluation follows the Planning, Monitoring, and Implementing (PMI) Evaluation Model for Decision-Making which was developed by the Division of Quality Assurance, District of Columbia Public Schools.

Findings

- The Basic Skills component focusing on giving needy students extra help in reading or mathematics involved 2,085 students in the seventh, eighth and ninth grades from 31 selected schools.

- After eight months of special instruction, 88% of 132 junior high students improved on a majority of the items which they had failed on the Prescriptive Reading Inventory taken in the Fall of 1984.

- After eight months of special instruction, 49% of 96 junior high students improved on a majority of the items which they had failed on the Diagnostic Mathematics Inventory taken in the Fall of 1984.

- The comparison of the percentile ranking of pre- and post-tests of the students' average CTBS total reading scores resulted in:

  a. From 6th to 7th grade, a decrease from 38 to 34,
  b. From 7th to 8th grade, a decrease from 25 to 23, and
  c. From 8th to 9th grade, an increase from 44 to 47.

- The comparison of the percentile ranking of pre- and post-tests of the students' average CTBS total mathematics scores showed:

  a. From 6th to 7th grade, an increase from 45 to 50,
  b. From 7th to 8th grade, an increase from 37 to 40, and
  c. From 8th to 9th grade, an increase from 50 to 60.

- With three exceptions, all teachers rated the five criteria of the two workshops (objectives, content, materials, organization/format and possibility for use of experiences) as either excellent or very good.

- In rating the effects of the Basic Skills program, 90% of the teachers (N = 30) rated the impact of the programs on students' achievement as positive; 80% perceived a positive impact on students' attitudes and 87% reported a positive impact on teachers' attitudes. In addition, 93% of the responding teachers checked that they were adapting materials and strategies to the special needs of students.

- The configuration checklists showed that 75% of the teachers were implementing all programs components as acceptable or ideal. The Level-of-Use (LoU's) interviews revealed that all of these teachers were as a minimum implementing their programs at the Routine Level (IVa).

- Monitoring records showed that in both semesters teachers from all schools except one were in compliance with the project guidelines.

- Twenty-eight teachers completed the Modern Geometry Summer Institute, receiving three certification credits from U.D.C.

- The level of satisfaction of teachers with the certification courses was high and positive for Differential Equations, Calculus I, Advanced Calculus and Precalculus/Trigonometry. The level of satisfaction with the course Mathematics Methods for Secondary Mathematics was somewhat lower. The most questioned evaluation criterion was the usefulness of these courses to classroom application.

- Thirty-one teachers enrolled in the content certification courses. Of the 19 project participants needing three or more credits for their certification, 17 (89%) project teachers took a minimum of three courses.

- Nine of ten (90%) participants in formal mathematics courses and inservices reached the competency level designated by the instructor as successful.

- Of the 16 teachers who participated in staff development events:

  a. 93% were satisfied with their improvement in classroom management, and
  b. 86% were satisfied with their improvement in planning for instruction.

BACKGROUND AND PROJECT DESCRIPTION

Introduction

Purpose - The purpose of the Basic Skills portion of this project was to improve the reading and mathematics skills of students in the Junior High School Transition program, grades seven, eight and nine in 27 junior high schools and 4 middle or extended elementary schools.

The goal of the Mathematics Teacher Resource Development portion of this project was to increase the capability of teachers to provide effective mathematics instruction to students, pre-kindergarten through 12th grade.

Needs - Although test scores have been improving in the District of Columbia Public Schools (DCPS), analysis of District test results for the 1981-82 school year showed that there was a larger percentage of students scoring below the 25th percentile in the basic skill areas of reading and mathematics than would be expected. With the Superintendent's long-range instructional objectives to "modify and strengthen the implementation of the Competency-Based Curriculum and the Student Progress Plan" and to "increase student performance in reading, language arts, (and) mathematics....", there was a need to provide additional resources for junior high school students scoring two or more years below grade level in reading or mathematics. Thus, the Basic Skills portion of the project was developed.

The need for the Mathematics Teacher Resource Development portion was based on standardized test data and course grades showing low academic achievement of DCPS students in mathematics. Nationally as well, students demonstrated lower interest and achievement in mathematics. Related to this information was the fact that the number of qualified teachers was steadily diminishing. According to Education Week, March 31, 1982, there has been a 77% decline in the number of secondary level mathematics teachers prepared in 600 teacher-training programs in the United States. Among newly employed mathematics and science teachers, over half of them were judged by their principals to be unqualified to teach in those fields but had been hired on an emergency basis because qualified teachers could not be found. The DCPS reflected this national trend. Out of necessity mathematics classes were assigned to teachers whose training had prepared them for other subjects. Many of them had few if any mathematics courses in college.

History - The original Basic Skills program was funded under ESEA Title II, Part B, beginning in March 1980. In the DCPS, the Basic Skills program had two components, one for the local education agency (LEA) and one for the state education agency (SEA). The purpose of the LEA program was to develop a curriculum in life skills for high school students. The areas emphasized were reading a newspaper, writing such as that used for letters and job applications, speaking clearly, interpreting graphic forms of communication, computational skills, money management and information utilization through logic.

The SEA portion was more concerned with coordinating, planning and disseminating in the Basic Skills area. That grant continued until June 30, 1982.

In 1982, the federal funding for individual programs such as Basic Skills was combined into block grants for states, under the Education Consolidation and Improvement Act (ECIA) Chapter 2, Sub-Chapter A, Basic Skills Development. The legislative intent of Sub-Chapter A was that funds be used "to develop and implement a comprehensive and coordinated program designed to improve elementary and secondary school instruction in the basic skills of reading, mathematics, and written and oral communication." The Improving Basic Skills in Reading and Mathematics program comprised a series of activities to meet this legislative mandate.

During the 1982-83 school year, the project covered two areas. Each project was evaluated separately. The first project was entitled Basic Skills in Reading and Mathematics, the purpose being the same as this year's, but with an emphasis on providing the services to the students in specially located centers. With the planned extension of the Student Progress Plan (SPP) to the seventh grade, the emphasis was changed to providing services to junior high students in transition classes.

The second project was entitled Mathematics Teacher Resource Development, which was designed to upgrade the quality of mathematics teaching in the DCPS. That aspect of the program continued during the 1984-85 school year. These two projects comprise the present Improving Basic Skills in Reading and Mathematics program.

Description of the Project

Target Population

The population served by the Basic Skills component consisted of 2,085 students in DCPS junior high and middle schools, seventh, eighth and ninth graders who were assigned to transition teachers for help in reading or mathematics. The target population for the Mathematics Teacher Resource Development consisted of (1) teachers in the DCPS who needed further training for certification as mathematics teachers, (2) mathematics teachers in the DCPS who needed to upgrade their skills in order to provide quality instruction to students and (3) potential mathematics teachers who might be recruited to teach in the DCPS.

Staffing

Personnel funded by the project were the assistant director of Reading, the assistant director of Mathematics, the assistant director for Resource Development, a clerk and the consultants for inservices. Other staff members contributing to the efforts were the Director of the Instructional Services Center, the supervising directors of Reading and of Mathematics, course instructors and the administrators and teachers in the 31 participating schools.

Program Components

The Basic Skills component was planned to supplement the regular program of project participants in the 27 junior high schools, one middle school and three extended elementary schools. Using criterion-referenced tests, transition teachers were to determine and record the areas in which students needed extra help. An individualized program was to be established for each

student as a supplemental learning experience with the appropriate records kept as part of the management system. Extra instructional materials would be supplied. Project staff were to monitor and provide technical assistance. Inservice sessions were to be held with consultants participating as needed. Both criterion-referenced and norm-referenced standardized tests to assess student improvement were to be given at the end of the year.

The Mathematics Teacher Resource Development was set up to implement teacher training and upgrading in mathematics by providing inservice and college level courses. Cooperation with local universities for courses was to be sought as well as talent from the DCPS Mathematics Department. Teachers taking courses would be evaluated on their knowledge of course content. Inservice and university courses would be offered after school hours, on-site in the DCPS. Workshops addressing specific skill needs or topics would be offered regionally, in designated schools, and at the Instructional Services Center. Individual counseling for teachers would be provided to assist in decision-making about appropriate activity selection and resource needs. Training activities would be designed to assist teachers in developing the competencies they needed to help students acquire required skills in mathematics.

EXTERNAL EVALUATION DESIGN - PLANNING, MONITORING, AND IMPLEMENTING (PMI) EVALUATION MODEL FOR DECISION-MAKING

The evaluation follows the Planning, Monitoring, and Implementing (PMI) Evaluation Model for Decision-Making which was developed by the Division of Quality Assurance, District of Columbia Public Schools. (See Appendix A.) The evaluation design, developed at the beginning of the project year, consisted of the intended inputs, processes and outcomes on specially designed status report forms. The interim report distributed at the mid-point of the project cycle related, on the status report forms, agreements or discrepancies between intended and observed inputs and processes. This final report includes the interim report data brought up-to-date, plus the agreements and discrepancies between intended and observed outcomes for each objective. Supporting data are included in the appendices. Preceding the PMI status report forms is the results section which summarizes the agreements and discrepancies for each objective and states a general conclusion.

EVALUATION RESULTS

Narrative Summary

The results of the evaluation are summarized in this section. Following the narrative are the inputs, processes and outcomes on which this summary is based, presented in the PMI reporting format. Supporting data and other information are in the appendices.

Objective A: At least two-thirds of the junior high transition students who are in the classes of junior high transition teachers and who receive reading and/or mathematics instruction during the 1984-85 school year in the Improving Basic Skills in Reading and Mathematics program, will acquire proficiencies in the majority of the skills in which they were found to be deficient, as measured by a criterion referenced test, and/or will improve those skills at a greater rate than previously as measured by a standardized test.

All program inputs, with the exception of adequate classroom space, showed agreement between the intended inputs and the observed inputs. That one discrepancy occurred because in one school space limitation required sharing a classroom with one teacher using it half the day while the other teacher "floated" and vice versa.

All processes showed agreement between intended and observed items. Project teachers planned and administered personalized instructional programs in reading and mathematics, carried out continuous assessment of their students and charted the progress of their students toward completion of reading or mathematics objectives. To measure the overall program effects, both pre and post criterion-referenced and norm-referenced tests were given.

The outcomes showed partial agreement between the intended and observed items. Students were to reach pre-established criteria on either the criterion- or norm-referenced standardized tests. For all three grade levels singly, the percent of 132 project students improving on a majority of items, failed on the Prescriptive Reading Inventory (PRI) criterion-referenced pre-test was higher than 67%. However, the percent of 96 project students improving on a majority of items, failed on the Diagnostic Mathematics Inventory (DMI) pre-test did not reach 67% for any of the separate grade levels. Aggregated results of the PRI post-test for the 7th, 8th and 9th graders were that 88% of the sample improved on a majority of the reading items that they had failed on the pre-test. On the other hand, only 49% of the sample of junior high students taking the DMI post-test improved on a majority of the mathematics items which they, as a group, had failed on the pre-test.

The percentile rankings of the transition students' average CTBS total reading and total mathematics scores were compared from 1984 to 1985 for the three junior high grade levels. On the CTBS, 7th graders decreased in their percentile ranking in reading from 38th to 34th from the end of 6th grade (1984) to the end of 7th grade (1985); while their percentile ranking in mathematics increased from 45th to 50th.

Likewise, 8th graders in the sample decreased in their percentile ranking in reading, going from 25th in 1984 to 23rd in 1985; while their percentile ranking in mathematics increased from 37th to 40th. And finally, 9th graders increased (from 8th grade in 1984 to 9th grade in 1985) both their percentile rankings in reading and in mathematics--with reading increasing from 44th to 47th and mathematics increasing from 50th to 60th.

All of the students were assigned to transition classes because of their past failures. Their average gains had been less than one year for each year in school. During this project year, those 9th graders in reading and students in all three grades in mathematics gained over one year's growth. However, with the exception of the 9th graders taking special mathematics instruction, the average grade level at the post-test time was still below the median.

As a caveat, all data discussed above were based on rather small samples of junior high students in the transition classes. Caution should be taken in the interpretation of the test results.

Objective B: By June 1985, after receiving the Improving Basic Skills in Reading and Mathematics program's staff development, instructional materials and instructional support from assistant directors of Reading and Mathematics, at least 80% of the project teachers will demonstrate their ability to work with skill-deficient students, as measured by an observation checklist, questionnaires and a sampling of Levels-of-Use interviews.

Additional inputs for Objective B all showed agreement; between the intended and observed items. These included inservice needs, such as consultants, adequate space and released time for the participating teachers to attend the inservices. Materials observed to be in agreement with intended outcomes included monitoring guides and evaluation forms.

All processes were also in full agreement from the intended to the observed. Orientation and inservice sessions were held; teachers were given materials, information and strategies; and technical assistance was provided through workshops and on-site visits by the coordinators. Checklists and project teacher questionnaires and interviews were assembled to collect evaluation data.

All observed outcomes were in agreement with the intended outcomes. With three exceptions, teachers' ratings for the two workshops were in either the "very good" or "excellent" categories. Thirty schools had all pluses on the observation checklist for the first semester regarding their focus on classroom environment, instruction and classroom management. And, they all maintained those marks on to the second semester observation. The teacher questionnaires (N = 30) showed that 93% of the teachers adapted materials and strategies to special needs of the transition students and 90% felt there was a positive impact of the program on school achievement, 80% on student attitudes and 87% perceived a positive impact on teachers' attitudes. Configuration checklists and Level-of-Use interviews showed that 75% of the teachers were presenting acceptable or ideal programs and that all of them were implementing the program at or beyond the Routine Level (IVa.)

Objective C: As a result of participation in the Mathematics Teacher Resource Development component of the Improving Basic Skills in Reading and Mathematics program, project teachers needing mathematics certification will complete an average of three courses toward their certification.

Except for the absence of a resource teacher trainer, all inputs for Objective C showed agreement between the intended and the observed.

There were two discrepancies between the intended processes and the observed processes. For teachers who completed all the courses needed for certification, not enough teachers to reflect a representative sample returned a feedback questionnaire. And, in addition, the course instructors did not fill out a questionnaire giving feedback regarding their courses for use in revision of future courses.

As outcomes, 31 teachers enrolled in the content certification courses. Of the 19 project participants needing three or more credits for their certification, 89% (17) of the project teachers took a minimum of three courses. Of the three certification courses given in the Fall of 1984, the average ratings of the evaluation criteria were the most positive for Differential Equations and, secondly, for Calculus I. The level of satisfaction of the teachers taking Mathematics Methods for Secondary Mathematics for all evaluation criteria was below average. Generally, the level of satisfaction for the two certification courses given in the Spring of 1985 (Precalculus/Trigonometry and Advanced Calculus) were above average, with the teachers in both courses questioning the usefulness of these two courses in regard to classroom application.

Objective D: As a result of participation in staff development events through the Mathematics Teacher Resource Development component of the Improving Basic Skills in Reading and Mathematics program, project teachers of mathematics pre K-12, will improve their competencies in classroom management, planning and content.

Except for the absence of a resource teacher trainer, all inputs for Objective D showed agreement between the intended and the observed.

All observed processes were in full agreement with the intended. The project coordinator surveyed the needs of mathematics teachers, pre K-12, and designed a staff development course for them. She also provided counseling for mathematics teachers requesting help in the areas of classroom management, instructional planning and mathematics content. At the close of the staff development course, participating teachers completed a course evaluation form giving their perceptions of their improvement in the three areas mentioned above--classroom management, planning for instruction and content.

All observed outcomes were compatible with their corresponding intended outcomes. Sixty-five (65) junior and senior high mathematics teachers filled out a needs survey, with more than half indicating that the most needed seminar would be on the topic "Computers and the Mathematics Curriculum." An analysis of content assessment results of participants in formal mathematics courses and inservices showed that 90% reached the competency level designated by their instructor as successful. Teachers also filled out a feedback survey rating

selected elements of the staff development activities. Over half of the responding teachers were satisfied with their improvements in classroom management and planning for instruction, 93% and 86%, respectively. Less than half (36%) of the teachers were satisfied with their improvements in their comprehension of mathematics.

Conclusion

The goals of this project were to develop and implement a program to improve instruction and learning in reading and mathematics and to provide resource development for mathematics teachers.

Objective A was partially reached with supportive data showing gains in percentile rankings of CTBS average reading or mathematics scores from 6th to 7th grade mathematics scores, 7th to 8th grade mathematics scores and 8th to 9th grade reading and mathematics scores. The data from the two criterion-referenced pre- and post-tests (PRI and DMI) were somewhat discrepant from the CTBS data discussed above. For the PRI, 88% of the sample of students improved on a majority of items failed on the pre-test. For the DMI, 49% of the sample improved on a majority of mathematics items, failed on the pre-test.

Objective B verified that, given training, teachers can work well with skill-deficient, junior high students in implementing the programs to fit the special needs of the students.

Objective C was met in that of the project teachers needing three or more credits for their certification, 89% of them took a minimum of three courses. In general, the project teachers' level of satisfaction with the certification courses was good, but somewhat questionable regarding the usefulness of several courses for classroom applications.

Objective D was partially achieved with 93% of the project teachers in grades pre K-12, participating in staff development events, perceiving that they improved their competencies in classroom management and 86% perceiving that they had improved their planning of instruction. Thirty-six percent were satisfied with their improvements in their comprehension of mathematics. However, it should be noted that emphasis for the staff development events was on the delivery of instruction and not on improvement of comprehension.

Results of the evaluation support the continuation of this project with the strong recommendation that more effort be addressed to including more junior high students in the evaluation. As it now stands, the results discussed in this paper should be interpreted with caution.

Decision

This report will be forwarded to the Project Director, the Project Manager, the LEA Chapter 2 Directors, the Superintendent and the Board of Education to aid them in their decision-making regarding this project.

FINAL EVALUATION REPORT

PLANNING, MONITORING, AND IMPLEMENTATION (PMI)
EVALUATION MODEL FOR DECISION-MAKING

Reporting Form

Goal: To develop and implement a program to improve instruction in the basic skills of reading and mathematics which supports, strengthens and augments the regular school program; and to provide resource development for mathematics teachers who do not hold certification in their field.

Objective A: At least two-thirds of the junior high transition students who are in the classes of junior high transition teachers and who receive reading and/or mathematics instruction during the 1984-85 year in the Improving Basic Skills in Reading and Mathematics program, will acquire proficiencies in the majority of the skills in which they were found to be deficient, as measured by a criterion referenced test, and/or will improve those skills at a greater rate than previously, as measured by a standardized test.

PART I

INPUTS

INTENDED	STATUS	OBSERVED
a. Project Manager	Agreement	a. The project manager is the Director of the Instructional Services Center.
b. Assistant Director of Reading	Agreement	b. Members of the Evaluation Unit met with the Assistant Director of Reading, the project co-coordinator.
c. Assistant Director of Mathematics	Agreement	c. Members of the Evaluation Unit met with the Assistant Director of Mathematics, the project co-coordinator.
d. Supervising Director of Reading	Agreement	d. Members of the Evaluation Unit met with the Supervising Director of Reading.

OBJECTIVE A

PART I (Continued)

INPUTS

INTENDED	STATUS	OBSERVED
e. Supervising Director of Mathematics	Agreement	e. Members of the Evaluation Unit met with the Supervising Director of Mathematics.
f. Clerk-typist	Agreement	f. This position was filled in the Spring of 1984 as verified by the board order.
g. Project teachers	Agreement	g. A complete roster of project teachers was submitted to the Evaluation Unit. A total of 49 teachers taught transition classes, with some teaching both reading and mathematics and others teaching just reading or mathematics.
h. Principals of project schools	Agreement	h. A complete roster of principals of project schools was submitted to the Evaluation Unit.
i. Regional supervisors assigned to transition teachers	Agreement	i. The project coordinators verified that regional supervisors were assigned to transition teachers.
j. Seventh, eighth and ninth grade students in classes of transition teachers	Agreement	j. Roster of students in transition classes was compiled and submitted to the Evaluation Unit.
k. Average class size of 20 students	Agreement	k. The Basic Skills Program directly served 2,085 7th, 8th, and 9th grade students. In total, there were 139 separate classrooms, which figures out to an average class size of 15.

OBJECTIVE A

PART I (Continued)

INPUTS

INTENDED	STATUS	OBSERVED
1. Adequate classroom space	Discrepancy	1. According to the project coordinators, space was adequate in all but one school. This input was similar to the previous year where two teachers in that particular school shared a classroom.
m. Adequate instructional materials and equipment	Agreement	m. Instructional materials and equipment were verified by the project coordinators as being adequate.
n. Pre- and post-tests forms	Agreement	n. Pre- and post-test forms for the criterion-referenced tests, "Prescriptive Reading Inventory" (PRI) and "Diagnostic Mathematics Inventory" (DMI) were the same as last year. The norm-referenced California Tests of Basic Skills (CTBS), given as pre-tests last year, were for the sixth grade Level 2, Form S and for the seventh and eighth grades Level 3, Form S. The CTBS, given in May of the current year as post-tests, were for grades seven and eight Level 3, Form T and for grade nine Level 4, Form T.

OBJECTIVE A

PART II

PROCESSES+

	INTENDED	STATUS		OBSERVED
1.1	Project coordinators will identify materials purchased previously that are consumable and need replacing.	Agreement	1.1	Project coordinators verified that an inventory was conducted showing a need for items such as test booklets and answers sheets.
1.2	Project coordinators will identify and order replacement materials.	Agreement	1.2	PSBA-10's in 1/18/85 and 10/25/84 for replacement of needed materials are on file in the project office.
1.3	Project coordinators as liaison personnel will make contact with building principals, regional supervisors and participating teachers about portions of the program with which each is involved.	Agreement	1.3	Evaluation Unit members examined memos to teachers regarding workshops (9/19/84); to principals regarding the administration of criterion-referenced tests (9/19/84) and to teachers regarding January post-tests for students involved in the project for only one semester (12/10/84). Memos for orientation for schools new to the project were also examined (10/2/84).
1.4	Project teachers will administer criterion-referenced pre-tests in reading and/or mathematics, using the results to diagnose	Agreement	1.4	Criterion-referenced pre-tests were administered in October 1984, as evidenced by completed test forms and class

+Processes numbered to correspond with outcomes.

OBJECTIVE A

PART II (Continued)

PROCESSES+

INTENDED		STATUS	OBSERVED	
	(Continued 1.4)			(Continued 1.4)
	students' needs in those areas.			summary sheets containing individual students' needs.
1.5	Project teachers will plan personalized instructional programs in reading or mathematics.	Agreement	1.5	Project coordinators verified that transition teachers planned personalized instructions for their students. This was further verified in teacher interviews by the Evaluation Unit.
1.6	Project teachers will instruct their students in reading or mathematics, following the personalized instructional plans.	Agreement	1.6	Teachers' instruction according to personalized instructional plans was confirmed by project coordinators and verified by teacher interviews by the Evaluation Unit.
1.7	Project teachers will carry out continuous assessment of their students.	Agreement	1.7	Project coordinators observed that teachers have been using their Basic Kits for continuous assessment of student progress. This was further verified by interviews of the project teachers by the Evaluation Unit.
1.8	Project teachers will chart continuous progress of their students toward completion of reading or mathematics objectives.	Agreement	1.8	Evaluation Unit members examined examples of teachers' student progress charts.

+Processes numbered to correspond with outcomes.

OBJECTIVE A

PART II (Continued)

PROCESSES+

INTENDED	STATUS	OBSERVED
1.9 Project teachers will keep inventory reports up-to-date and will submit the completed forms at the end of the year.	Agreement	1.9 The Evaluation Unit members examined copies of completed inventory lists.
1.10 Project teachers will administer post-tests in reading or mathematics to their students.	Agreement	1.10 Post-tests were administered at the end of the school year to all students who were in the program the full year. The post-tests are on file and were analyzed by the evaluators.
1.11 Project personnel will provide the ECIA Evaluation Unit with names and identification numbers of project students for use in retrieving standardized test scores from the computer.	Agreement	1.11 The project evaluators received class rosters displaying the names and ID numbers for participating students. Both student names and ID numbers were used for retrieving CTBS Total Reading and Total Mathematics scores from the computer.

+Processes numbered to correspond with outcomes.

OBJECTIVE A

PART III

OUTCOMES

INTENDED	STATUS	OBSERVED
1. By June 1985, analysis of raw scores submitted to the ECIA Chapter 2 Evaluation Unit by the project manager will show that at least two-thirds of the students receiving at least eight months reading or mathematics instruction through this project		1.
(a.) will acquire proficiencies in the majority of the reading skills in which they were found to be deficient on a criterion-referenced test,	Agreement	(a.) Results for the Prescriptive Reading Inventory (PRI) for a total of 132 junior high students were that 88% improved on a majority (above 50%) of the items which they had failed on the pre-test. Across all reading test items and all 132 students, 76% of the total number of items wrong on the pre-test were correct on the post-test. (See Appendix B for separate grade results).
(b.) will acquire proficiencies in the majority of the mathematics skills in which they were found to	Discrepancy	(b.) In June 1985, 49% of 96 junior high students taking the Diagnostic Mathematics Inventory (DMI)

OBJECTIVE A

PART III (Continued)

OUTCOMES

INTENDED	STATUS	OBSERVED
(Continued b.)		(Continued b.)
be deficient on a criterion-referenced test, or that the students		improved on a majority (above 50%) of the mathematics items which they had failed on the pre-test given in the Fall 1984. Across all mathematics test items and all 96 students, approximately 50% of the total number of items wrong on the pre-test were correct on the post-test. (See Appendix B for separate grade results.)
(c.) will show a higher percentile ranking than the previous year in reading on a standardized test,	Partial Agreement	(c.) The percentile rankings of the students' average CTBS total reading scores were compared from 1984 to 1985 for grades 7, 8 and 9 separately. These results follow. Results for 187 7th graders who had taken the 6th grade CTBS in 1984 showed a decrease in their reading

OBJECTIVE A

PART III (Continued)

OUTCOMES

INTENDED	STATUS	OBSERVED
		(Continued c.) percentile rank from a 38 percentile ranking in 1984 to a 34 percentile ranking in 1985 The 199 8th grade students who had taken the CTBS in the 7th grade in 1984 also demonstrated a decrease in their reading percentile ranking going from 25 in 1984 to 23 in 1985. And finally, 48 9th graders who had taken the CTBS while in 8th grade in 1984 showed an increase in their reading percentile rank from a 44 percentile ranking in 1984 to a 47 percentile ranking in 1985. (See Appendix B.)
(d.) will show a higher percentile ranking than the previous year in mathematics on a standardized test.	Partial Agreement	(d.) The percentile rankings of the students' average CTBS total mathematics scores were compared from 1984 to 1985 for grades 7, 8 and 9 singly. In

OBJECTIVE A

PART III (Continued)

OUTCOMES

INTENDED	STATUS	OBSERVED
		(Continued d.) mathematics, 187 7th graders who had been tested on the CTBS as 6th graders demonstrated a gain in their percentile ranking from 1984 to 1985 with their ranking increasing from 45 to 50. The 199 8th grade students who had taken the CTBS in the 7th grade in 1984 showed an increase in their mathematics percentile ranking from 37 in 1984 to 40 in 1985. And, the 48 9th graders who had taken the CTBS as 8th graders in 1984 showed an increase in their mathematics percentile rank from a 50 ranking in 1984 to a 60 percentile ranking in 1985. (See Appendix B.)

FINAL EVALUATION REPORT

PLANNING, MONITORING, AND IMPLEMENTATION (PMI)
EVALUATION MODEL FOR DECISION-MAKING

Reporting Form

Goal: To develop and implement a program to improve instruction in the basic skills of reading and mathematics which supports, strengthens and augments the regular school program; and to provide resource development for mathematics teachers who do not hold certification in their field.

Objective B: By June 1985, after receiving the Improving Basic Skills in Reading and Mathematics program's staff development, instructional materials and instructional support from assistant directors of reading and mathematics, at least 80% of the project teachers will demonstrate their ability to work with skill-deficient students, as measured by an observation checklist, questionnaires and a sampling of Levels-of-Use interviews.

PART I

INPUTS

INTENDED	STATUS	OBSERVED
For Inputs a through m, see Objective A, pages 14 - 16.		
n. Consultants for inservices	Agreement	n. Evaluators examined agendas for two inservice workshops listing the names of the consultants who facilitated the workshops.
o. Adequate space for inservices	Agreement	o. Project coordinators verified that the space at Langdon used for the inservices was adequate.
p. Released time for project teachers to attend inservices	Agreement	p. Evaluation Unit members examined the memo of 9/24/84 from the associate superintendents to hire substitute teachers where necessary, allowing Basic Skills teachers to attend inservices.

OBJECTIVE B

PART I (Continued)

INPUTS

INTENDED	STATUS	OBSERVED
q. Suggested student record form for project activities.	Agreement	q. Project coordinators noted that the record form used in the previous year would be used again.
r. Observation checklist for Assistant Directors on-site visits.	Agreement	r. Sample monitoring guides for on-site visits were examined by Evaluation Unit members. (See Appendix C.)
s. Outline for Teacher Questionnaires.	Agreement	s. Surveys are on file in the Evaluation Unit office.
t. Levels-of-Use (LoU) scoring sheets.	Agreement	t. LoU scoring sheets are on file in the Evaluation Unit office.

OBJECTIVE B

PART II

PROCESSES+

INTENDED	STATUS	OBSERVED
1.1 Orientation sessions will be held in each region as requested.	Agreement	1.1 Announcement of orientation sessions on 10/2/84 and 10/11/84 for schools new to the project was examined by Evaluation Unit members.
1.2 At least two half-day inservice sessions will be held during the school year for project teachers.	Agreement	1.2 Agendas for the "Make and Take" workshop (10/17/84) and the "Computer Workshop" (2/14/85) were examined by Evaluation Unit members. (See Appendix D.)
1.3 During the first inservice, teachers will be given information on project evaluation requirements.	Agreement	1.3 An overview of the Basic Skills program school year given by the project coordinators was noted on the agenda for the first inservice (10/17/84). Included in this overview was information on project evaluation requirements.
1.4 During the first inservice, consultants will provide strategies for the effective use of materials.	Agreement	1.4 The agenda for the first inservice showed that the consultant provided activities to construct and use manipulative teaching aids.
1.5 During the second inservice, successful strategies will be discussed including those reported by teachers in the program.	Agreement	1.5 Project coordinators reported that a portion of the inservice was devoted to teachers sharing their ideas, experiences and strategies. Two teachers also received

+Processes number to correspond with outcomes.

OBJECTIVE B

PART II (Continued)

PROCESSES+

INTENDED	STATUS	OBSERVED
		(Continued 1.5) awards for successful strategies at this inservice (2/14/85).
1.6 Project teachers will complete evaluation forms for each inservice.	Agreement	1.6 Samples of evaluation forms for both inservices were examined by Evaluation Unit members.
2.1 Project materials will be delivered to all project teachers.	Agreement	2.1 Project coordinators verified that all project teachers received their materials.
2.2 Project coordinators will prepare and distribute instructional bulletins periodically.	Agreement	2.2 Basic Skills Bulletins for October 1984 and January 1985 are on file in the Evaluation Unit. (See Appendix E.)
2.3 Project coordinators will make on-site support visits to project teachers.	Agreement	2.3 School visit logs and monitoring checklists were examined by Evaluation Unit members.
2.4 Project coordinators will respond to individual teachers' requests for technical assistance.	Agreement	2.4 Project coordinators confirmed that they have filled requests for replacement of lost materials and have facilitated the transfer of materials between schools.
2.5 Once each semester, project coordinators will complete checklists using information from student folders, interviews and classroom observation.	Agreement	2.5 Samples of monitoring guides (checklists) were examined by Evaluation Unit members.

+Processes numbered to correspond with outcomes.

OBJECTIVE B

PART II (Continued)

PROCESSES+

INTENDED	STATUS	OBSERVED
2.6 During the spring of 1985, project teachers will complete teacher questionnaires.	Agreement	2.6 Teacher questionnaires were completed and returned by 30 of 49 teachers, a 60% response rate. (See Appendix F.)
2.7 During the second semester, ECIA Chapter 2 Evaluation Unit personnel will complete Levels-of-Use (LoU) interviewing on sampling of project teachers.	Agreement	2.7 Evaluators conducted LoU interviews with Innovation Configurations in the Spring of 1985 with 44 teachers, comprising a 90% sample of the participating teachers. (See Appendix G.)

+Processes numbered to correspond with outcomes.

OBJECTIVE B

PART III

OUTCOMES

INTENDED	STATUS	OBSERVED
1. An analysis of raw scores of teacher ratings of project workshops, submitted to the ECIA Chapter 2 Evaluation Unit by the project manager by June 1985 will show mean ratings to be above average on the value of the workshop to participants and on the meeting of workshop objectives.	Agreement	1. Twenty-two teachers rated the "Make and Take" workshop on five criteria on a scale of 1 to 5, with 1 indicating the workshop was "not applicable" and 5 indicating the workshop was "excellent." All five mean ratings were above average, with the average being 3.0. Listed below are the five means for the five rating criteria. Criteria — Average Rating Objectives 4.4 Content 4.5 Materials 4.6 Organization/ Format 4.2 Possibility for Use of Experiences 4.6 Combined Criteria 4.5 Twenty teachers rated the "Computer Workshop" on the same five criteria as above, with the average ratings for each being". Criteria — Average Rating Objectives 4.7 Content 4.7 Materials 4.7 Organization/ Format 4.5 Possibility for Use of Experience 4.6 Combined Criteria 4.6 (See Appendix H.)

OBJECTIVE B

PART III (Continued)

OUTCOMES

INTENDED	STATUS	OBSERVED
2. An analysis of information submitted to the ECIA Chapter 2 Evaluation Unit by the project manager by June 1985 will show that at least 80% of the project teachers have adopted strategies and materials to the special needs of students, to be measured as follows:		
(a.) an increase in the number of pluses on the observation checklist from the first to the second semester observations;	Agreement	(a.) Thirty schools had all pluses on the observation checklist for the first semester for classroom environment, instruction and classroom management. They all maintained these pluses on to the second semester observation. The one exception was Douglass Junior High whose Basic Skills lab is not in operation due to incomplete staffing.
(b.) an above average mean rating on teacher questionnaires;	Agreement	(b.) The first portion of the teacher questionnaire was directed toward measurement of the effects of the Basic Skills program in three areas. Ninety percent (90%) of the 30 responding teachers rated the impact of the Basic Skills program on students' achievement as positive. Out of a possible score of five, indicating a positive effect of the program,

OBJECTIVE B

PART III (Continued)

OUTCOMES

INTENDED	STATUS	OBSERVED
		(Continued 2b.) mean rating was 4.3. Eighty percent (80%) of the teachers rated the program's effect on students' attitudes as positive, with a mean rating of 4.2 and 86.7% of the teachers rated the program's effect on teachers' attitudes as positive, with a mean rating of 4.5. The second portion of the questionnaire was directed toward application of the Basic Skills program. On the Likert-type questionnaire item asking the extent to which teachers adapted materials to the special needs of students, 93.4% checked either a "4" or a "5" with "5" indicating that teachers had "totally" adapted the materials and "1" indicating there was no special adaptation. The mean rating of the 30 responding teachers was 4.5. On the item asking for the extent to which teachers adapted strategies to the special needs of students, 93.4% of the teachers checked a "4" or a "5", with the mean rating being 4.5. (See Appendix I.)
(c.) Levels-of-Use (LoU) ratings of at least Level III (Mechanical Use).	Agreement	(c) Levels-of-Use (LoU) interviews determined the degree to which the program components were

OBJECTIVE B

PART III (Continued)

OUTCOMES

INTENDED	STATUS	OBSERVED
		(Continued 2c.) being implemented - whether verifications in the components were unacceptable, acceptable or ideal. Forty-four (44) teachers were interviewed, with 33 teachers (75%) implementing all components of the program either acceptably or ideally. Of these 33 teachers, 27 (82%) were implementing the program at the Routine Level (IVa), meaning a routine pattern of use had been established and the teachers felt comfortable with it. Six teachers (18%) were implementing the program at the Refinement Level (IVb), meaning a refinement of the program methodology to increase the impact on their students.

FINAL EVALUATION REPORT

PLANNING, MONITORING, AND IMPLEMENTATION (PMI)
EVALUATION MODEL FOR DECISION-MAKING

Reporting Form

Goal: To develop and implement a program to improve instruction in the basic skills of reading and mathematics which supports, strengthens and augments the regular school program; and to provide resource development for mathematics teachers who do not hold certification in their field.

Objective C: As a result of participation in the Mathematics Teacher Resource Development component of the Improving Basic Skills program, project teachers needing mathematics certification will complete an average of three courses toward their certification.

PART I

INPUTS

INTENDED	STATUS	OBSERVED
For Inputs a, e, and f please see Objective A, pages 14 and 15.		
b. Assistant Director for Resource Development	Agreement	b. The evaluation team met with the Assistant Director for Resource Development who is coordinator for the Mathematics Teacher Resource Development component of the program.
c. Resource Teacher Trainer	Discrepancy	c. This position was dropped from the budget.
d. U.D.C. staff members and other course instructors	Agreement	d. A memo to the director of Staff Development citing U.D.C. personnel was examined by Evaluation Unit members.
g. Secondary school teachers of mathematics in the DCPS who are not certified as	Agreement	g. The coordinator examined a printout of teachers to see which mathematics

OBJECTIVE C

PART I (Continued)

INPUTS

	INTENDED	STATUS		OBSERVED
	(Continued g.)			(Continued g.)
	probationary or permanent mathematics teachers.			teachers had permanent or temporary certification. The print-out was also examined by Evaluation Unit members.
h.	Adequate space for classes.	Agreement	h.	Project coordinator reported that space was adequate.
i.	Adequate materials and supplies.	Agreement	i.	Project coordinator reported that materials and supplies were adequate.
j.	Needs assessment forms for mathematics teachers.	Agreement	j.	A copy of the Mathematics Teachers Needs Survey is on file in the Evaluation Unit.
k.	Mathematics inservices, university courses and workshops.	Agreement	k.	An announcement for a Summer Institute in Modern Geometry (July 9-July 26, 1984) and a certification course update for Pre-Calculus with Trigonometry I and Advanced Calculus are on file in the Evaluation Unit.
l.	Instruments to assess course performance of participants as designated by instructors	Agreement	l.	U.D.C. course outlines indicated the course evaluation component.
m.	Instruments to assess affective aspects of the program.	Agreement	m.	Samples of the course evaluation affective instrument are on file in the Evaluation Unit.

OBJECTIVE C

PART I (Continued)

INPUTS

INTENDED	STATUS	OBSERVED
n. Feedback instrument for teachers who have completed all courses for certification. To be developed by project coordinator and Evaluation Unit.	Agreement	n. The feedback instrument for teachers was developed by the project coordinator and Evaluation Unit staff. (See Appendix J.)
o. Feedback instrument for inservice course instructors	Agreement	o. The project coordinator verified that the instrument for course instructors had been developed. (See Appendix K.)
p. Recording system to indicate teachers enrolled in training and their attendance at courses.	Agreement	p. The Division of Continuing Education "Course Class List" was used to record this information.
q. Recording system to indicate mathematics counseling provided.	Agreement	q. These data come from an entry survey used by the project coordinator. The data are put on the computer.
r. Informational material on the Resource Development program for dissemination purposes.	Agreement	r. The brochure "The Secondary Mathematics Teacher Training Program (SMTTP)" is on file in the Evaluation Unit.

OBJECTIVE C

PART II

PROCESSES+

INTENDED	STATUS	OBSERVED
1.1 U.D.C. staff members will present a Modern Geometry Summer Institute attended by DCPS teachers working for certification credits.	Agreement	1.1 A copy of the Modern Geometry workshop syllabus (July 9 - - July 26, 1984) is on file in the Evaluation Unit.
2.1 The project coordinator will conduct a needs survey for planning project courses for the academic year.	Agreement	2.1 A copy of the Mathematics Teachers Needs Survey is on file in the Evaluation Unit.
2.2 The project coordinator will identify resources in the community for course offerings to meet the assessed needs.	Agreement	2.2 A copy of a chart of resources is on file in the Evaluation Unit. The project coordinator verified that an announcement of various available resources titled "Shop and Go" was distributed and will be continuously updated.
2.3 The project coordinator will develop a cost effective plan for delivery of courses on-site.	Agreement	2.3 Because there were no funds in the project for courses, the project coordinator sought and obtained other funding from the Office of Staff Development. This was verified by correspondence examined Evaluation Unit members.
2.4 Project participants (teachers) will complete a questionnaire giving feedback on courses for use in revision of future courses.	Agreement	2.4 As evidence of completion, course evaluations for Calculus I, Differential Equations, and Mathematics Methods for Secondary Mathematics for Fall 1984 and for Pre-Calculus/Trigonometry and Advanced Calculus for

+Processes numbered to correspond with outcomes.

OBJECTIVE C

PART II (Continued)

PROCESSES+

INTENDED	STATUS	OBSERVED
		(Continued 2.4) Spring 1985 are on file in the Evaluation Unit. (See Appendix L.)
2.5 Teachers who have completed all the courses required for certification will complete a feedback questionnaire.	Discrepancy	2.5 Some teachers completed the feedback questionnaire. However, the number of teachers returning the questionnaire was not large enough to reflect a valid representation of teachers.
2.6 Project instructors will complete a questionnaire giving feedback on courses for use in revision of future courses.	Discrepancy	2.6 The questionnaires were mailed out to the instructors, but were not returned by enough instructors.
3.1 The project coordinator will send out announcements of courses available to recruit teachers to the program.	Agreement	3.1 Copies of memos and brochures describing courses are on file in the Evaluation Unit.
3.2 The project coordinator will interview teachers requesting counseling into appropriate courses and will keep records of contacts.	Agreement	3.2 The Evaluation Unit examined the project coordinator's teacher roster with personal notes about the contacts made.
3.3 The project staff will monitor registration, instruction and support needs.	Agreement	3.3 Project coordinator verified that registration and instruction have been monitored and that a special tutorial class was set up for teachers needing additional support.

+Processes numbered to correspond with outcomes

OBJECTIVE C

PART II (Continued)

PROCESSES+

INTENDED	STATUS	OBSERVED
3.4 The project staff will assist in course instruction as needed.	Agreement	3.4 Project staff providing course instruction have been observed by Evaluation Unit members.
3.5 Teachers will attend courses offered through this program verified with records kept of attendance.	Agreement	3.5 The project coordinator verified that U.D.C. instructors kept records of attendance.
3.6 Teachers attending courses will complete activity (course) evaluation forms.	Agreement	3.6 Completed activity (course) evaluation forms are on file in the Evaluation Unit.

+Processes numbered to correspond with outcomes

OBJECTIVE C

PART III

OUTCOMES

INTENDED	STATUS	OBSERVED
1. An examination of records submitted by June 1985 to the ECIA Evaluation Unit by the project coordinator will show that at least 25 teachers attended the Modern Geometry Summer Institute and received certification credit.	Agreement	1. An examination of grade sheets showed that 28 teachers completed the Modern Geometry Summer Institute and received three certification credits from U.D.C.
2. An examination of records submitted by June 1985 to the ECIA Chapter 2 Evaluation Unit by the project coordinator will show that a plan of action reflecting mathematics teacher certification needs and available resources is on file at the Instructional Services Center.	Agreement	2. The Program Work Plan and a folder from the Board of Examiners containing a listing of teachers and the certified courses needed by each of them are on file at the Instructional Services Center.
3(a.) A list submitted to the ECIA Chapter 2 Evaluation Unit by the project coordinator of project participants, with the number of courses required for their secondary mathematics certification and the number of such courses completed, will show that the participants have completed an average of three of the courses needed for certification.	Agreement	3(a.) Thirty-one (31) teachers enrolled in the content certification courses offered during SY 1984-85. Of the 19 project participants needing three or more courses for their certification, 17 (89%) project teachers took a minimum of three courses. (See Appendix M.)
3(b.) Analysis of activity (courses) evaluation forms submitted to the ECIA Chapter 2 Evaluation Unit by the project	Partial Agreement	(3b.) Three certification courses were given in the Fall 1984. Participants'

OBJECTIVE C

PART III (Continued)

OUTCOMES

INTENDED	STATUS	OBSERVED
(Continue 3b.)		(Continue 3b.)
coordinator will show that participants rated the courses above average on a five-point scale.		assessments of the courses and the instructors' performance were generally reserved. The average ratings of the evaluation criteria were the most positive for the course Differential Equations. Next most positive was the evaluation of Calculus I. The level of satisfaction of the teachers taking Mathematics Methods for Secondary Mathematics was on the low side, with all evaluating criteria, on a scale of 1 to 5, being below 3 (the average rating). Generally, the evaluations for the two certification courses given in the Spring of 1985 were above average. The teachers in both courses (Precalculus/ Trigonometry and Advanced Calculus) questioned the usefulness of these courses to classroom application. (See Appendix L.)

OBJECTIVE C

PART III (Continued)

OUTCOMES

INTENDED	STATUS	OBSERVED
3(c.) Analysis of activity (course) evaluation forms submitted to the ECIA Chapter 2 Evaluation Unit by the project coordinator will show that project instructors rated the courses above average on a five point scale.	Discrepancy	3(c.) The project instructors did not respond to the course evaluation forms.

FINAL EVALUATION REPORT

PLANNING, MONITORING, AND IMPLEMENTATION (PMI)
EVALUATION MODEL FOR DECISION-MAKING

Reporting Form

Goal: To develop and implement a program to improve instruction in the basic skills of reading and mathematics which supports, strengthens and augments the regular school program; and to provide resource development for mathematics teachers who do not hold certification in their field.

Objective D: As a result of participation in staff development events through the Mathematics Teacher Resource Development component of the Improving Basic Skills in Reading and Mathematics program, project teachers of mathematics pre K-12, will improve their competencies in classroom management, planning and content.

PART I

INPUTS

INTENDED	STATUS	OBSERVED
Inputs are the same as those listed for Objective C, except for inputs d and g.		
d. Instructor of staff development events	Agreement	d. The project coordinator was the only instructor.
g. Teachers of mathematics, pre K-12 in the DCPS.	Agreement	g. The presence of mathematics teachers was verified by project coordinator.

OBJECTIVE D

PART II

PROCESSES+

INTENDED	STATUS	OBSERVED
1.1 The project coordinator will conduct needs survey for planning staff development events (workshops, college courses, inservices, mini-seminars and individual counseling) in the area of mathematics.	Agreement	1.1 The project coordinator verified that an informal needs survey via phone contact, visits in the field and conferences was conducted.
1.2 The project coordinator will identify resources in the community to provide staff development events to meet the assessed needs.	Agreement	1.2 A chart of activities for 1985 was examined by the Evaluation Unit members and is on file in the Evaluation Unit. (See Appendix N.)
1.3 The project coordinator will design a staff development event.	Agreement	1.3 "Strategies for Effective Teaching" was designed for April 1985.
1.4 Project participants (teachers) will complete a questionnaire giving feedback for use in revision of future events.	Agreement	1.4 A feedback survey was developed. This questionnaire was examined by the Evaluation Unit members and is on file in the Unit.
1.5 Project instructors will complete a questionnaire giving feedback for use in revision of future events.	Agreement	1.5 The project coordinator was the only instructor. She has reconstructed the series for next year.
2.1 The project staff will recruit participants through activities such as the announcement of events.	Agreement	2.1 Announcements for "Planning for Mastery", "Varying Teaching Styles", "Classroom Management" and "Creative Problem Solving" are on file in the Evaluation Unit.

+Processes numbered to correspond with outcomes.

OBJECTIVE D

PART II (Continued)

PROCESSES+

INTENDED	STATUS	OBSERVED
2.2 The project coordinator will do counseling by telephone and in person with mathematics teachers who request help in the areas of management, planning and content. The project coordinator will keep records of the counseling contacts.	Agreement	2.2 Evidence of counseling performed was demonstrated by examples of "Joint Observation Report", "Plan of Assistance" forms and "Instructional Services Staff - Monthly Activity Reports" and examined by Evaluation Unit members.
2.3 The project staff will monitor registration, instruction and support needs.	Agreement	2.3 Monitoring began in 2/11/85.
2.4 The project staff will assist in instruction, as needed.	Agreement	2.4 The project coordinator is instructing a two-month sequence titled "Strategies for Effective Teaching". A copy of the course outline is on file in the Evaluation Unit. (See Appendix O.)
2.5 Teachers will attend the events offered through this program with records kept of attendance.	Agreement	2.5 Examples of class rosters were examined by Evaluation Unit members.
2.6 Informal courses and inservices, teachers will complete content assessment instruments, with records kept of competency level attained.	Agreement	2.6 Records were kept regarding the competency level of the teachers. The teachers completed a content assessment. These are all on file at the Instructional Services Center.

+Processes numbered to correspond with outcomes

OBJECTIVE D

PART II (Continued)

PROCESSES+

INTENDED	STATUS	OBSERVED
2.7 Teachers attending events will complete activity evaluation forms. Project participants will complete a questionnaire giving their perception of their improvement in the areas of classroom management, planning and content.	Agreement	2.7 One section of the teachers' feedback survey is devoted to the teachers' perception of their improvement in the areas of classroom management, planning and content. (See Appendix P.)

+Processes numbered to correspond with outcomes

OBJECTIVE D

PART III

OUTCOMES

INTENDED	STATUS	OBSERVED
1. An examination of records submitted by June 1985, to the ECIA Chapter 2 Evaluation Unit by the project coordinator, will show that a plan of action, reflecting needs of mathematics teachers, pre K-12, and available resources is on file at the Instructional Services Center.	Agreement	1. Included in the Program Work Plan is an assessment of mathematics teacher needs. In June 1984, 65 junior and senior high school teachers filled out the Mathematics Teacher Needs Survey. The teachers were to indicate enrichment seminars they would participate in for inservice credits. The most popular staff development seminar indicated by 36 teachers was on the topic of Computers and the Mathematics Curriculum. Second was New Ways to Look at Algebra and Geometry: Functions and Graphs. Other possible staff development topics and the number of mathematics teachers designating each of them are given in Appendix Q.
2(a.) An analysis of content assessment results of participants in formal mathematics courses and inservices, submitted by June 1985 to the ECIA Chapter 2 Evaluation Unit by the project coordinator, will show that at least 80% of the participants have attained the competency level designated by the instructor as successful.	Agreement	2(a.) The Evaluation Unit members saw evidence that nine of ten (90%) participants reached the competency level designated by the instructor as successful.

OBJECTIVE D

PART III (Continued)

OUTCOMES

INTENDED	STATUS	OBSERVED
2(b.) An analysis of questionnaires of participants in all varieties of staff development events, submitted by June 1985 to the ECIA Chapter 2 Evaluation Unit by the project coordinator, will show an above average mean rating by project participants on their perception of their improvement in areas of classroom management, planning and content.	Agreement	2(b.) Sixteen teachers who had participated in staff development events filled out a "feedback survey" indicating their rating of selected elements of the staff development activities. Each staff development course element was rated on a scale from 1 to 5, with 5 being the most positive rating. (See Appendix P.) o One-hundred percent (100%) of the participants thought the manner in which the information was presented was intensive and exciting. In a scale of 1 to 5, their average rating was a 4.5. o Ninety-four percent (94%) of the teachers indicated that the presentation was clear. Their average rating was 4.3. o Eighty-eight percent (88%) of the teachers thought that the staff development course was useful. Their average was 4.4. o Eighty-eight percent (88%) of the teachers

OBJECTIVE D

PART III (Continued)

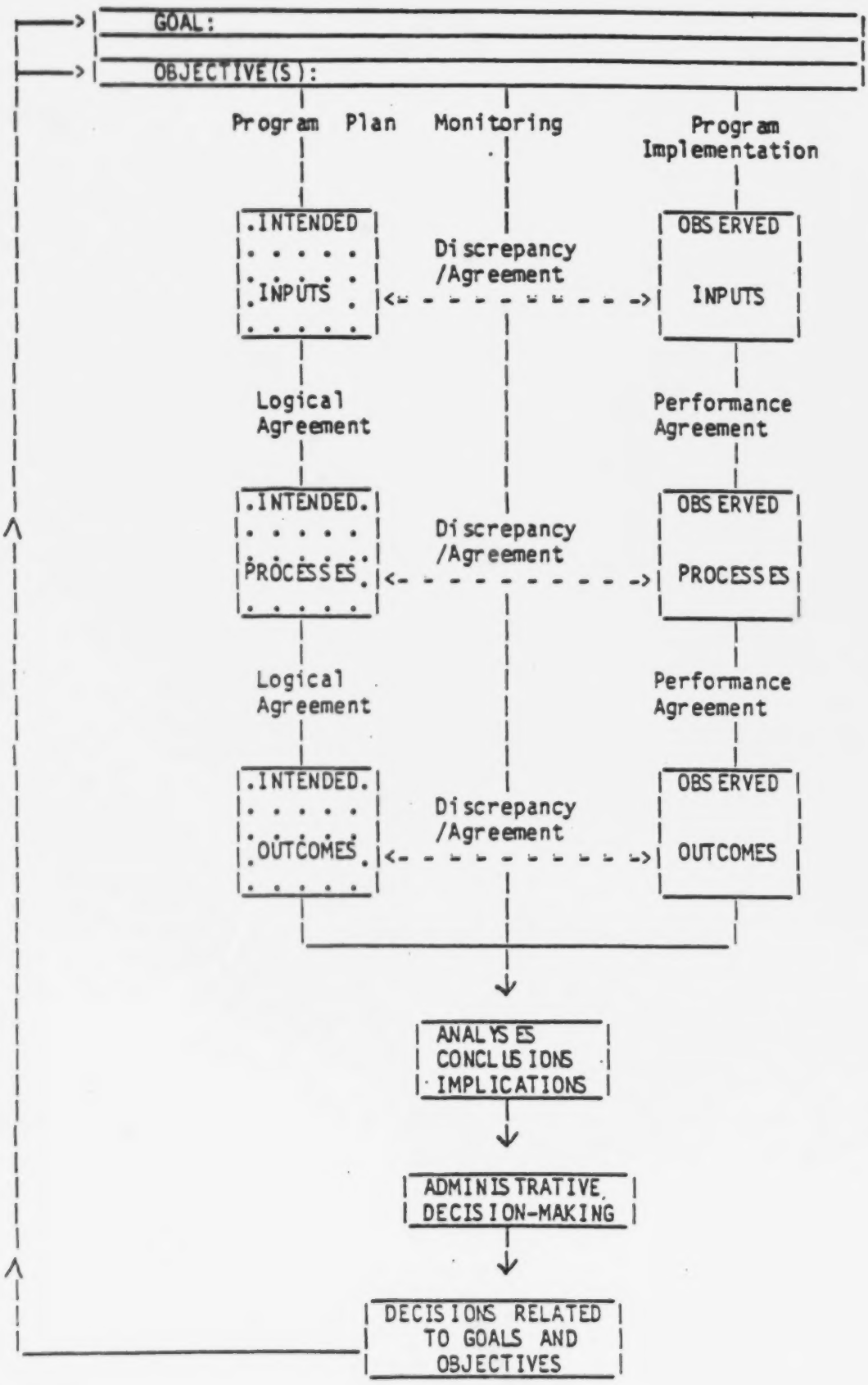
OUTCOMES

INTENDED	STATUS	OBSERVED
		(Continue 2b.) thought that the courses brought about, maintained or increased their interest in the course. Their average rating was 4.4. o All teachers indicated that the course objectives were met. Their average rating was a 4.7 out of a possible 5. o Ninety-three percent (93%) of the teachers were satisfied with their improvement in classroom management. Their average rating was 4.3 o Eighty-six percent (86%) of the teachers were satisfied with their improvement in planning for instruction. Their average rating was 4.4. o Thirty-six percent (36%) of the participants in the staff development activities were satisfied with their improvements in the comprehension of mathematics, with the average rating being 3.5. However, it should be noted that emphasis for staff development was on the delivery of instruction and not on improvement of comprehension.

APPENDIX A

PLANNING, MONITORING, AND IMPLEMENTING (PMI) EVALUATION MODEL FOR DECISION-MAKING

EVALUATION MODEL SCHEMA



APPENDIX B

RESULTS OF CRITERION-REFERENCED AND NORM-REFERENCED STANDARDIZED TESTS IN READING AND MATHEMATICS

THE PRESCRIPTIVE READING INVENTORY

N = 132*

GRADE LEVEL	7TH	8TH	9TH	NOT INDICATED	TOTAL
NUMBER OF STUDENTS	39	55	28	10	132
PERCENT OF STUDENTS IMPROVING ON A MAJORITY OF ITEMS FAILED ON PRE-TEST	85%	86%	93%	100%	88%

THE DIAGNOSTIC MATHEMATICS INVENTORY

N = 96*

GRADE LEVEL	7TH	8TH	9TH	NOT INDICATED	TOTAL
NUMBER OF STUDENTS	11	42	7	36	96
PERCENT OF STUDENTS IMPROVING ON A MAJORITY OF ITEMS FAILED ON PRE-TEST	55%	50%	43%	47%	49%

* all students for whom both pre- and post-tests were submitted.

CALIFORNIA TESTS OF BASIC SKILLS (CTBS)

PERCENTILE RANKING AND GRADE EQUIVALENT OF
AVERAGE TOTAL READING RAW SCORES

N = 434*

		JUNE 1984 (PRE-TEST)		JUNE 1985 (POST-TEST)	
PRE-POST GRADE LEVELS	NUMBER OF STUDENTS	PERCENTILE RANKING	GRADE EQUIVALENT	PERCENTILE RANKING	GRADE EQUIVALENT
GRADE 6 - GRADE 7	187	38	5.7	34	6.2
GRADE 7 - GRADE 8	199	25	5.5	23	6.0
GRADE 8 - GRADE 9	48	44	8.2	47	9.4

PERCENTILE RANKING AND GRADE EQUIVALENT OF
AVERAGE TOTAL MATHEMATICS RAW SCORES

N= 434*

		JUNE 1984 (PRE-TEST)		JUNE 1985 (POST-TEST)	
PRE-POST GRADE LEVELS	NUMBER OF STUDENTS	PERCENTILE RANKING	GRADE EQUIVALENT	PERCENTILE RANKING	GRADE EQUIVALENT
GRADE 6 - GRADE 7	187	45	6.3	50	7.6
GRADE 7 - GRADE 8	199	37	6.6	40	7.8
GRADE 8 - GRADE 9	48	50	8.7	60	10.4

*All project students reported who had CTBS reading and mathematics scores for both the Spring of 1984 and 1985.

APPENDIX C

BASIC SKILLS MONITORING GUIDE

SCHOOL: _____ TEACHER _____

DATE: _____ OBSERVER _____

	YES	NO	COMMENTS
A. CLASSROOM ENVIRONMENT:			
1. Does the environment reflect a focus on basic skills?			
2. Are the objectives for instruction displayed?			
3. Does the environment provide for flexible grouping?			
4. Does the environment reflect an activity-oriented laboratory concept?			
B. INSTRUCTION:			
1. Is there evidence of collaborative planning with regular subject area teacher?			
2. Is there evidence of pre-assessment?			
3. Is there evidence that CBC Curriculum objectives are being utilizied?			
4. Were the objectives for instruction stated clearly and concisely?			
5. Did the students understand the objectives?			
6. Did the students respond favorably to stated objectives?			
7. Are the learning activities appropriate for the students?			
8. Are the students actively involved in their learning?			

B. INSTRUCTION: (continued)

9. Is there evidence of instructional options to help in the achivement of the objective?

10. Is there evidence of assessment of mastery after instruction?

11. Is there evidence of the use of supplementary and manipulative materials in instruction?

C. CLASSROOM MANAGEMENT:

1. Is there evidence of systematic recordkeeping and reporting strategies?

2. Are student progress records available to the regular subject area teacher, to student and/or parent for review?

3. Was there orderly closure to the lesson?

4. Were appropriate follow-up activities given?

5. Was there evidence of home/school communication?

YES	NO	COMMENTS

APPENDIX D

AGENDAS FOR THE TWO WORKSHOPS

"Make and Take" Workshop
for
Basic Skills Teachers

October 17, 1984
8:30 A.M. - 3:30 P.M.

AGENDA

Objective: To provide participants an opportunity to make appropriate manipulative teaching aids for their students.

8:30 - 9:00	Registration, Coffee and Conversation
9:00 - 9:15	Overview of Basic Skills Program School Year 1984-85 Mrs. LaVerne S.Glascoe
9:15 - 9:30	Testing/Evaluation Mrs. Vivian K. Carson
9:30 - 9:45	Overview of "Make and Take" Workshop Mrs. Doris Daniels, Facilitator
9:45 - 11:45	Construction of Learning Materials
11:45 - 1:00	Lunch
1:00 - 2:45	Construction of Learning Materials
2:45 - 3:00	Evaluation
3:00 - 3:30	Dissemination of Testing, Reading, etc. materials

BASIC SKILLS TEACHERS

COMPUTER WORKSHOP

February 14, 1985

AGENDA

- *Overview of Uses of Computers in Basic Skills Education*
- *Diagnostic Inventory of Basic Arithmetic/Reading Skills*
- *Software Demonstration*
  Reading
  Mathematics

Presenters:

Hiram H. Graham
Educational Consultant

Gordon Lewis
Supervising Director of Mathematics

Frances Powell
Supervising Director of Social Studies

Helen W. Turner
Supervising Director of Reading

LaVerne S. Glascoe
Vivian K. Carson
Coordinators

APPENDIX E

BASIC SKILLS BULLETINS

BASIC SKILLS BULLETIN

October 1984 Volume II Number 1

KUDOS: BASIC SKILLS TEACHERS

At the Superintendent's Conference for Administrators and Supervisors in August, a very favorable report was presented by the Division of Quality Assurance on the Basic Skills Program.

Two of the findings discussed were: (1) gains demonstrated by students on the criterion referenced tests and (2) gains demonstrated by students on the norm referenced standardized tests.

In using the PRT and the DMI to measure improvement, a determination was made of the items failed on the pre-tests and the number of those items passed on the post-tests. Although further analysis will be done, the results of a random sample of 189 reading students revealed that the students reached the criteria level for passing on 64% of those items failed on the pre-tests. In mathematics, a random sample of 46 students reached the passing level on 68% of the items failed on the pre-tests. Dr. Marcia McBeath also stated that these are small samples and must be interpreted with caution.

On the standardized test, the CTBS scores at the end of the 6th grade were compared to scores at the end of the 7th grade for a random sample of 40 students in the program. Because of the small sample and the statistical factor or regression to the mean these results must also be interpreted with caution, but they are: In reading, at the end of the 6th grade, the students tested at the 24th percentile. At the end of the 7th grade, they were at the 55th percentile. In mathematics, at the end of the 6th grade, they tested at the 39th percentile; at the end of the 7th, they were at the 42nd percentile.

The report of the complete evaluation of the Basic Skills Program will be ready for distribution in January. However, the results found so far suggest that this Chapter 2 program is having a positive effect on the students.

Overview of Basic Skills Program School Year 1984-85

September - Establishment of classes for 7th, 8th and 9th grade students

October - Administration of PRI and DMI
Basic Skills Workshop, October 17, 1984

November - On-site support
Begin School Monitoring Visitations

December - On-site support

January - Student Assessment

February - Computer Workshop

March - On-site support
Monitoring Visitations

April - On-site support

May - Administration of PRT and DMI

"Make and Take" Workshop

A "Make and Take" workshop has been scheduled for teachers of students in the Basic Skills Program. This workshop will feature 200 manipulative teaching aids on Basic Skills. Four popular formats for personalizing instruction will be presented on a variety of topics in new and exciting ways to teach basic skills. This workshop will be an opportunity to grow professionally and to share successful strategies.

We look forward to the participation of the teachers who work with the Basic Skills reading and/or mathematics classes.

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News Briefs . . .

The National Institute of Education's new booklet, How to Help Your Children Achieve in School, is directed to the nation's parents, many of whom want to help but don't know where to begin. This will help parents teach strategies for paying attention, keeping interested in schoolwork, learning and remembering, studying and taking notes, and taking tests. This attractive 23-page booklet is $3.75. It is not copyrighted and NIE encourages copying and distributing as necessary. Write Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Professional Development

December - Fifth Eastern Regional Conference of the International Reading Association December 13 - 15, 1984 - Baltimore, Maryland

April - National Council of Mathematics Teachers 63rd Annual Meeting, April 17 - 20, 1985 - San Antonio, Texas

May - International Reading Association Conference - May 5 - 9, 1985 - New Orleans, Louisiana

A Course, BASIC ALGEBRA, for 3 Inservice Credits, is being offered to sharpen your entry-level skills for teachers preparing to enter a mathematics certification program.

When: Tuesday and Thursday
4:00 p.m. - 7:00 p.m.
October 9 - December 11, 1984

Where: Instructional Services Center
Langdon School
20th and Franklin Streets, N.E.

FREE: Family Math Activities

Start off the school year with another plus for mathematics education. Reproduce the "Family Math Awareness Activities" insert in this Instructional Bulletin. Send copies home with your students. This is a convenient way to encourage parents to take an interest. The activities suggest ways family members can help students learn and use mathematics more effectively. All of the activities can be modified to fit the age, interests, and mathematics background of individual students. Topics included are Energy Use, Scale Drawings, Estimation and Measurement, Best Buy, and "Pick-a-problem" Games.

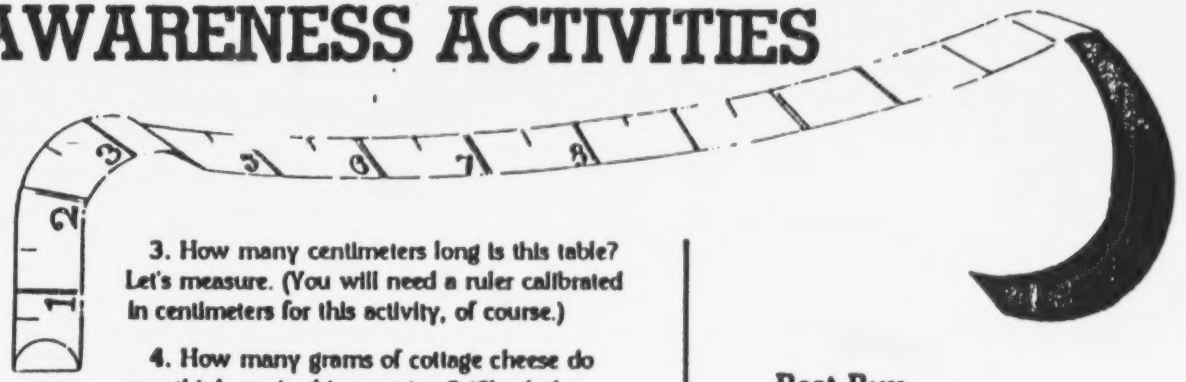
Academic Preparation for the World of Work

Academic preparation is not just for the college bound. Students who enter the work force directly from high school need many of the same academic competencies as do those going on to college. This conclusion, suprising to many educators, emerged from a series of dialogues co-sponsored by the College Board, local business groups, and educational institutions in five major cities in the United States.

The 200 business leaders and educators who participated in the dialogues enthusiastically endorsed the six Basic Academic Competencies: reading, writing, speaking and listening, mathematics, reasoning, and studying. The message to the schools is clear: work-bound students, whether following vocational or general education courses of study, shouldn't be taken off the academic track.

EDUCATIONAL EQuality PROJECT

FAMILY MATH AWARENESS ACTIVITIES



Education is the joint responsibility of school, home, and the person being educated. This pamphlet suggests ways in which family members can help students learn and use mathematics more effectively. Try each of the activities. Repeat selected activities from time to time to reinforce specific ideas. All of them can be modified to fit the age, interests, and mathematical background of individual students.

Estimation and Measurement

The ability to estimate and measure length, area, volume, weight, temperature, and time helps us to be better citizens, more intelligent consumers, and more productive workers. Practice in estimating various quantities, and then verifying the estimate by measuring, is the best way to gain proficiency in these skills. For very young children up to about age six, you should begin with nonstandard units, such as pencils, crayons, the child's own feet. For older children, use standard and metric units of measure, such as inches, quarts, centimeters, liters, and so on. Since both the metric and traditional systems of measure are in common use in the United States, students should have experience with both.

Here are some questions you can ask to initiate helpful estimation and measurement activities:

1. How many pencils long is this table? Let's measure with the pencil to see how good your guess was.

2. How many baby steps (heel to toe) do you think you would need to get across this room? Try it to check your guess. Now how many of my steps will it take? (The child should guess that it will take fewer steps for the larger feet to cross the room.)

3. How many centimeters long is this table? Let's measure. (You will need a ruler calibrated in centimeters for this activity, of course.)

4. How many grams of cottage cheese do you think are in this container? (Check the guess by reading the label. If you weigh the cottage cheese, remember to subtract the weight of the container.)

5. How many liters of apple juice do you think are in this bottle? (Check by reading the label or measuring with a measuring cup.)

6. What do you think the outside temperature is today? (Check your guess with a thermometer.)

7. How long do you think it will take you to run to that tree and back? (Time the runner with a stopwatch or a watch with a second hand.)

Best Buy

Work with your children to decide which grocery store is best for your shopping. You may wish to base this on price alone or have them take into consideration such things as availability of items and brands you want, quality, service, and convenience. If you start by just asking the question, they may look at ads in the newspaper to compare prices or check the price of a few items in the stores themselves. A more sophisticated approach would be to keep track of all the groceries you buy over a period of several weeks, and then multiply prices by the number of each item you buy in a month. The students should be made aware that spending an additional $5 on gasoline and an additional hour or so in time to save several dollars at a distant grocery store is probably not a bargain.

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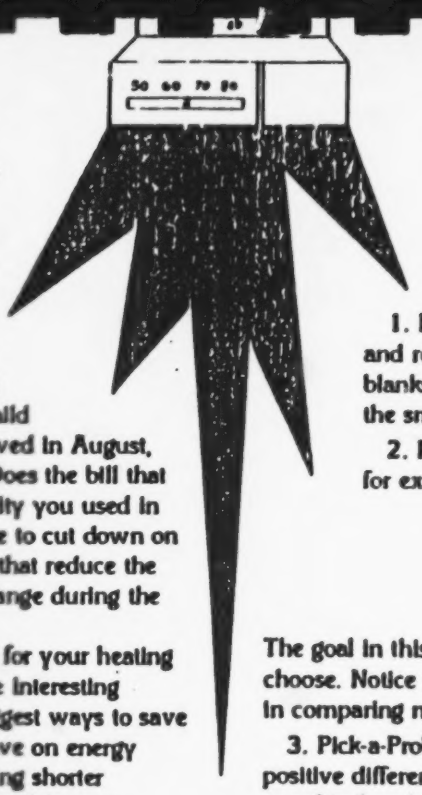
NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS
1906 Association Drive ☐ Reston, VA 22091 ☐ 703/620-9840 ☐ CompuServe: 75445,1161 ☐ The Source: STJ228

Energy Use

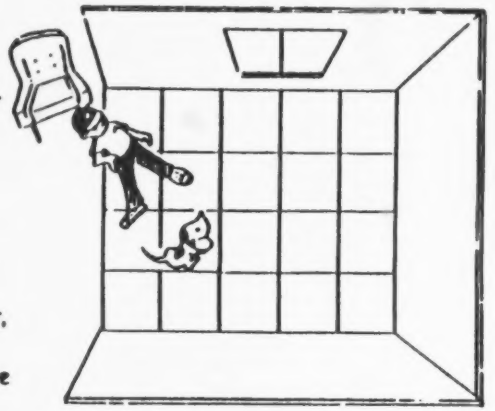


First, have your child collect and organize available data about how you use energy in your home. For example, your monthly electric bills starting in January might have been $53.66, $65.99, $64.00, $46.56, $52.06, $41.85, $53.41, $148.71, $182.20, $165.90, $59.09, and $46.36. A bar graph could be made of these with the months listed. Then there are some natural questions your child should ask. Why are the bills received in August, September, and October so high? Does the bill that comes in August reflect the electricity you used in August or July? If your family were to cut down on the air conditioning it uses, would that reduce the bills? Did the price of electricity change during the year? If so, how much?

By following a similar procedure for your heating bills, your child may discover some interesting patterns and perhaps be able to suggest ways to save money on fuel. Possible ways to save on energy might include better insulation, taking shorter showers, moving vacations to times of the year when you spend a lot on heat or air conditioning, and so on.

If you have children who drive an automobile, you might suggest that they keep records of miles driven and gasoline used to see if average fuel consumption changes depending on who drives the car and conditions under which the car is driven.

Scale Drawings



Have your child make a scale drawing of some room of your house and scale templates of the furniture in that room. You can then decide together, by moving the templates about on the scale drawing, whether it would be possible to arrange the furniture differently. You can also decide whether you could fit new pieces of furniture into the room, and so on. Scale drawings of other rooms of the house can be made to decide about moving furniture from one room to another.

"Pick-a-Problem" Games

There are many games you can play with your children that will help them develop mathematical skills and understanding. These include some standard board games and card games. The following sequence of pencil-and-paper games can be used to practice different arithmetic skills. They also give considerable opportunity for thinking and problem solving. each game, use cards numbered from 0 to 9 to fill in the missing digits. You can remove th face cards from an ordinary deck of playing cards and let the ten stand for zero and the ace stand for 1.

1. Pick-a-Number. Each player makes a blank form like this: ☐ ☐ ☐ Then one player picks a ca and reads the number. Each player writes that number in one of the spaces. This is repeated until all blanks are filled in. The player with the largest number wins. To vary the game, have the player will the smallest number, or the greatest even number win.

2. Pick-a-Problem: Addition. Same as pick-a-number except that the blanks are for a multidigit sum for example, the arrangements below:

$$\begin{array}{r}\square\square\\ +\square\square\\ \hline\end{array} \qquad \begin{array}{r}\square\square\square\\ +\ \square\square\\ \hline\end{array} \qquad \begin{array}{r}\square\square\square\\ +\square\square\square\\ \hline\end{array}$$

The goal in this game can be to get the greatest sum, the least sum, the greatest even sum, or whatever you choose. Notice that both these games require some thinking about place value and probability as well as practi in comparing numbers. The second also requires practice in addition.

3. Pick-a-Problem: Subtraction. A subtraction version of the preceding game. The goal is to get the smallest positive difference (zero or greater.) Therefore, the top number, or minuend, must be at least as large as the lo or subtrahend.

4. Pick-a-Problem: Multiplication. A multiplication version of the same game. An interesting situation results when a three-digit number is multiplied by a two-digit number. Positioning the digits so as to get the greatest product is quite tricky, and explaining the solution requires considerable understanding of the multiplication procedure. Try, for example, to position 9, 8, 7, 6, and 5 in the blanks below so as to get the best greatest product. (Hint: The winning product has three zeros.) Then try to explain why that is the largest product. A calculator is recommended for this activity.

$$\begin{array}{r}\square\square\\ \times\ \square\\ \hline\end{array}$$

5. Pick-a-Problem: Division. Various division versions of the game are possible, with a goal of either a large or small quotient.

Prepared by Stephen S. Willoug
New York Univer
New York, NY 10

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Food for Thought
Reading and Writing

The history of reading instruction shows that for many years teachers have intuitively sensed that the processes of reading and writing are related. During the last two decades educational researchers have confirmed these insights. Researchers, in particular, have begun to clarify the relationships between comprehending and composing.

Comprehension and composition are processes, whereby the sender(s) and receiver(s) of a message interact through the use of a common language and similar experiences.

The factors that join comprehending and composing are: purpose, content, organization, language, creativity and dynamics.

The relationships between comprehension and composition are shown in the chart that follows.

COMPREHENSION AND COMPOSITION CONNECTED

	Comprehension	Composition
Purpose	reasons	intent
Content	Prior Knowledge experience information	World Knowledge information experience
Organization	Schema listener/reader text	Structure audience message
Language	receptive lexicon nextworks	expressive lexicon networks
Creativity	imagery	imagination
Dynamics	interests	vision

BASIC SKILLS BULLETIN

January 1985 Volume II Number 2

Q. & A. Questions Answers

John J. Pukulski, University of Delaware

Q. *I've been convinced by several conference speeches I've heard that teaching vocabulary will improve my students' reading comprehension. Am I right in this conclusion, and are there better or worse ways to teach vocabulary?*

A. *I agree that vocabulary instruction is an important part of reading comprehension and there is experimental evidence to show that comprehension improved as a result of direct vocabulary instruction. There are also recent studies suggesting that vocabulary instruction is a very neglected part of reading lessons.*

By all means, teach vocabulary. I consider that one of the worst ways to deal with vocabulary is to neglect it. Some teachers buy into what might be called "incidental" instruction. They feel that vocabulary should be discussed only as students encounter new words in an interesting context. However, there is no plan for word study.

Another form of incidental teaching is to shift responsibility for vocabulary development to the students themselves—for example, having them jot down unknown words and look them up in the dictionary during independent reading. I agree with Dale and O'Rourke (1971) that incidental teaching of vocabulary amounts to being accidental.

Here is another guideline for avoiding poorer practices: Don't use the same approach to vocabulary development week in and week out. Any teaching technique used over and over becomes boring. For some reason many teachers seem to find a format for teaching vocabulary that they like and then they use it repeatedly.

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To build variety in vocabulary instruction, I recommend Techniques of Teaching Vocabulary by Edgar Dale and Joseph O'Rourke (Field Educational Publications. 1971). Many college libraries will have this book, and it is still in print. It discusses principles of teaching vocabulary and gives over 300 pages of teaching suggestions.

Since space is limited, here are just three suggestions for vocabulary instruction.

(1) Context clues. Be sure you very deliberately teach children to use context clues to approximate word meaning. The meaning of many unfamiliar words can be figured out independently, if students carefully consider clues such as recognizing contextual synonyms (e.g. Jerry was very contemplative, just sitting by the window thinking); antonym clues (e.g. who could have expected such a drastic change, one minute it was frigid, the next scorching hot); recognizing examples of a category (e.g., there were many types of dog present: collies, beagles, chows).

After students have read a selection, take them back to the sentences with challenging vocabulary; discuss with them how the meaning could be approximated via the clues. Talk deliberately about word similarities, opposites, and examples. Some children seem to use such clues intuitively some of the time. Make students more conscious of how these clues operate for consistent use.

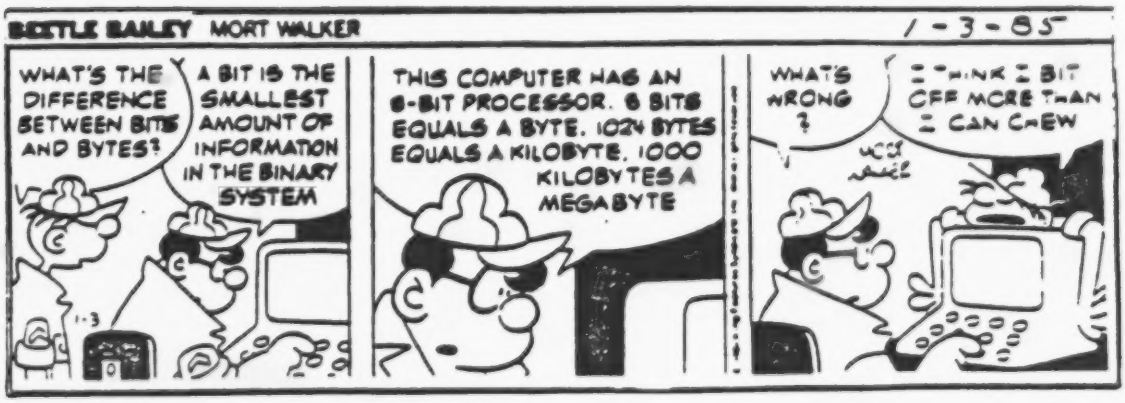
(2) Grouping. Group vocabulary words in meaningful ways.
One frequent problem is that teachers seem to teach one word at a time. You'll get more instruction mileage with grouping. Group words by word parts. If the new word is pedestrian, relate it to the known word pedal- to show that the root ped means foot— then go on to develop the meaning of words like pedometer, pedicure, and even pedestal.

Teach conceptually related words. When deposit is encountered in a banking context, introduce words like withdraw, check, and overdraft.

(3) Teaching dictionary skills. Unfortunately, development of dictionary skills is often taken for granted or falls between the cracks. Skills like alphabetizing and dealing with phonetic respellings require very systematic teaching. Are such skills being taught? If not, students won't gain needed independence.

These three suggestions are not original, yet I think they are among the most important. In our rush to do all we have to do, we often fail to use them. There's much more that could be said about vocabulary. Please send your questions, and I'll be happy to say more.

From The CLASSROOM Reading Teacher


BEETLE BAILEY MORT WALKER
1-3-85
WHAT'S THE DIFFERENCE BETWEEN BITS AND BYTES?
A BIT IS THE SMALLEST AMOUNT OF INFORMATION IN THE BINARY SYSTEM
THIS COMPUTER HAS AN 8-BIT PROCESSOR. 8 BITS EQUALS A BYTE. 1024 BYTES EQUALS A KILOBYTE. 1000 KILOBYTES A MEGABYTE
WHAT'S WRONG ?
I THINK I BIT OFF MORE THAN I CAN CHEW

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*IDEAS

Directions: To solve the problem, conduct an experiment by following the directions. A calculator may be used if one is available.

Objective: Experience in problem using large numbers.

How Long Would It Take You to Tear a Piece of Paper For Everyone in The United States?

Conduct an experiment.

Time yourself for one minute. How many pieces of paper can you tear in one minute?

_____

At this rate, how many pieces could you tear in one hour? _____

How long would it take you to tear a piece of paper for everyone in the United States (220,000,000 people)? _____

*IDEAS from the ARITHMETIC TEACHER, NCTM, 1982.

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APPENDIX F

TEACHER EVALUATION OF THEIR PERCEIVED EFFECTS OF THE BASIC SKILLS PROGRAM AND OF THEIR APPLICATION OF THE PROGRAM

WHEN COMPLETED, PLEASE FOLD, STAPLE AND PUT IN SCHOOL MAIL.

ECIA Chapter 2

Improving Basic Skills in
Reading and Mathematics

Teacher Evaluation

Name _____ Date _____

School _____ Subject _____

As part of our evaluation of the ECIA Chapter 2 Basic Skills program, we are asking your help in rating two areas, your application of the program and your opinion of the effects of the program.

Please complete each item in this form by circling a number from 1 to 5, with 1 representing the minimum and 5 representing the maximum.

1. EFFECT OF PROGRAM	Negative				Positive
a. Impact on students' achievement	1	2	3	4	5
b. Impact on students' attitudes	1	2	3	4	5
c. Impact on teachers' attitudes	1	2	3	4	5

2. APPLICATION	Not at all				Totally
a. Extent to which you adapted materials to special needs of students	1	2	3	4	5
b. Extent to which you adapted strategies to special needs of students	1	2	3	4	5

052284

Prepared by
Division of Quality Assurance

APPENDIX G

BASIC SKILLS CONFIGURATION DIAGRAM

BASIC SKILLS CONFIGURATION DIAGRAM

1.	Materials and Equipment		
	(1)	(2)	(3)
	At least 3 different program materials are used each session.	At least 1 program material is used each session.	No program materials are used each session.
2.	Diagnosis		
	(1)	(2)	(3)
	Students are diagnosed individually using PRI and/or DMI tests and teacher judgement.	Students are diagnosed individually using any diagnostic test and teacher judgement.	Students are diagnosed using teacher judgement only or are not diagnosed.
3.	Record-Keeping		
	(1)	(2)	
	Individual record sheet is used to record diagnosis and prescription.	No individual record sheets are used.	
4.	Teaching Strategies		
	(1)	(2)	
	Teacher readjusts instructional strategies according to students' needs.	Teacher does not readjust instructional strategies according to students' needs.	
5.	Materials Use		
	(1)	(2)	
	Teacher readjusts materials according to students' needs.	Teacher does not readjust materials according to students' needs.	
6.	Updating		
	(1)	(2)	
	Student learning plans for personalizing instruction are regularly up-dated.	Student learning plans for personalized instruction are not regularly updated.	
7.	Scheduling		
	(1)	(2)	(3)
	Students are taught for 1 class period 5 times per week.	Students are taught for 1 class period 3 times per week.	Students are not taught for at least 1 class period 3 times per week.
8.	Posttesting		
	(1)	(2)	(3)
	Students are postested using the PRI and/or DMI.	Students are posttested using the same test used for the diagnostic pretest.	Students are not posttested.

CODE: Variations to the right of the solid line are unacceptable; variations to the left are acceptable.

Variations to the left of the dotted line are ideal, as prescribed by the developer.

Questions for interview on the
Basic Skills Configuration

Component 1

What types of program materials did you receive?

Which ones did you use?

How often did you use these materials?

Components 2 and 8

How were the students' strengths and weaknesses determined?

*Were the students tested?

*What instruments were used?

*How many times?

*What instrument was used pre- and what instrument post?

Component 3

Describe for me your record-keeping procedures?

Component 4 and 5

What strategies and materials did you use to meet students' needs?

*How did you adjust these to the needs of individual students?

Component 6

Did you develop learning plans for personalized instruction?

Can you describe for me how you used these plans in your instructional setting?

*How often are they updated?

Component 7

How often did the basic skills classes meet?

*How long?

*How many times per week?

---

*Ask only if configuration response was not forthcoming in previous question.

APPENDIX H

TEACHER RATINGS OF PROJECT WORKSHOPS

TEACHER RATINGS OF PROJECT WORKSHOPS

"MAKE AND TAKE WORKSHOP"

N = 22

RATED CRITERIA	EXCELLENT (5)		VERY GOOD (4)		ADEQUATE (3)		LESS THAN ADEQUATE (2)		NOT APPLICABLE (1)		AVERAGE RATING
	#	%	#	%	#	%	#	%	#	%	
OBJECTIVES	9	41	13	59	0	0	0	0	0	0	4.4
CONTENT	11	50	11	50	0	0	0	0	0	0	4.5
MATERIALS	14	64	7	32	1	5	0	0	0	0	4.6
ORGANIZATION/ FORMAT	7	32	13	59	2	9	0	0	0	0	4.2
POSSIBILITY FOR USE OF EXPERIENCES	14	64	8	36	0	0	0	0	0	0	4.6

"COMPUTER WORKSHOP"

N = 20

RATED CRITERIA	EXCELLENT (5)		VERY GOOD (4)		ADEQUATE (3)		LESS THAN ADEQUATE (2)		NOT APPLICABLE (1)		AVERAGE RATING
	#	%	#	%	#	%	#	%	#	%	
OBJECTIVES	13	68	6	32	0	0	0	0	0	0	4.7
CONTENT	13	68	6	32	0	0	0	0	0	0	4.7
MATERIALS	14	70	6	30	0	0	0	0	0	0	4.7
ORGANIZATION/ FORMAT	10	50	10	50	0	0	0	0	0	0	4.5
POSSIBILITY FOR USE OF EXPERIENCES	12	60	7	35	0	0	0	0	0	0	4.6

APPENDIX I

RESULTS OF THE TEACHER EVALUATION OF THE BASIC SKILLS PROGRAM

TEACHER EVALUATION OF THE EFFECT AND
APPLICATION OF THE BASIC SKILLS PROGRAM

LIKERT-SCALE

EFFECT OF PROGRAM	(5) POSITIVE		(4)		(3)		(2)		(1) NEGATIVE		AVERAGE RATING
	#	%	#	%	#	%	#	%	#	%	
A. IMPACT ON STUDENTS' ACHIEVEMENT	11	37	16	53	3	10	0	0	0	0	4.3
B. IMPACT ON STUDENTS' ATTITUDES	12	40	12	40	6	20	0	0	0	0	4.2
C. IMPACT ON TEACHERS' ATTITUDES	18	60	8	27	4	13	0	0	0	0	4.5

APPLICATION	(5) TOTALLY		(4)		(3)		(2)		(1) NOT AT ALL		AVERAGE RATING
	#	%	#	%	#	%	#	%	#	%	
A. EXTENT TO WHICH YU ADAPTED MATERIALS TO SPECIAL NEEDS F STUDENTS	17	57	11	37	2	7	0	0	0	0	4.5
B. EXTENT TO WHICH YU ADAPTED STRATEGIES TO SPECIAL NEEDS F STUDENTS	17	57	11	37	2	7	0	0	0	0	4.5

APPENDIX J

FEEDBACK SURVEY FOR TEACHERS

IMPROVING BASIC SKILLS

FEEDBACK SURVEY FOR _____
(Fill in Title of Course)

Instructions: Please rate each of the following items by circling a number from 5 to 1, with the highest rating to the left.

1. The manner in which the information was presented was:

Exciting				Dull
5	4	3	2	1

2. The clarity of the presentation was:

Very Clear				Very Unclear
5	4	3	2	1

3. The value of the course to me was:

Extremely Useful				Practically Useless
5	4	3	2	1

4. The courses brought about, maintained, or increased my interest in the topic:

Very Much				Not At All
5	4	3	2	1

5. The course objectives were met:

Very Much				Not At All
5	4	3	2	1

6. As a result of this course how satisfied are you with your improvement in:

	High Degree				Low Degree
a. classroom management	5	4	3	2	1
b. planning for instruction	5	4	3	2	1
c. comprehension of mathematics	5	4	3	2	1

7. Please list any other areas in which you would like further staff development courses.

APPENDIX K

FEEDBACK INSTRUMENT FOR INSERVICE COURSE INSTRUCTORS

ECIA Chapter 2 Assessment
Course Evaluation

The results of this survey will be used to design strategies for counseling teachers in the project and planning mini-seminars for staff development. We thank you for your cooperation.

Course Title _____

	Level of satisfaction				
	High Degree				*Low Degree*
	5	*4*	*3*	*2*	*1*
1. *The instructor followed a course syllabus/outline in a reasonable fashion.*					
2. *The content material was presented in a manner which facilitated comprehension.*					
3. *The instructor's classroom manner facilitated the efforts of class members to succeed.*					
4. *Assessments (tests) of content followed the objectives or syllabus/outline.*					
5. *The instructor's expectations were reasonable.*					
6. *Criteria for measuring achievement in the course were reasonable.*					
7. *Your students' level of success met their expectations.*					
8. *Your students' level of success met the expectations of the instructor.*					

Please comment or make recommendations about any of the items above if you wish. List the number of the item and your comment.

Item No.	*Comment*

APPENDIX L

EVALUATIONS OF MATHEMATICS CERTIFICATION COURSES FOR
FALL 1984 AND SPRING 1985

ECIA Chapter 2 Assessment
Course Evaluation

The results of this survey will be used to design strategies for counseling teachers in the project and planning mini-seminars for staff development. We thank you for your cooperation.

Course Title Calculus I Fall 1984.

AVERAGE RATING			Level of satisfaction: High Degree 5	4	3	2	Low Degree 1
3.5	1.	The instructor followed the course syllabus/outline in a reasonable fashion.		1	1		
4.5	2.	The content material was presented in a manner which facilitated comprehension.	1	1			
4.0	3.	The instructor's classroom manner facilitated the efforts of class members to succeed.	1		1		
3.0	4.	Assessments (tests) of content followed the objectives or syllabus/outline			2		
4.5	5.	The instructor's expectations were reasonable.	1		1		
4.5	6.	Criteria for measuring achievement in the course were reasonable.	1	1			
3.0	7.	Your level of success met your expectations.			2		
3.0	8.	Your level of success met the expectations of the instructor.			1		
	9.	As a result of this course, you feel you have improved in:					
0.0		a. classroom management					
0.0		b. planning for instruction					
3.0		c. comprehension of mathematics			2		

Please comment or make recommendations about any of the items above if you wish. List the number of the item and your comment.

Item No.	Comment
9.	If classes had begun as scheduled, more content area could have been covered. Loss of time and content did not enable students to be adequately prepared for Calculus II.

ECIA Chapter 2 Assessment
Course Evaluation

The results of this survey will be used to design strategies for counseling teachers in the project and planning mini-seminars for staff development. We thank you for your cooperation.

Course Title Differential Equations Fall 1984.

AVERAGE RATING			Level of satisfaction: High Degree 5	4	3	2	Low Degree 1
3.8	1.	The instructor followed the course syllabus/outline in a reasonable fashion.	3	5	6		
3.9	2.	The content material was presented in a manner which facilitated comprehension.	3	6	5		
3.9	3.	The instructor's classroom manner facilitated the efforts of class members to succeed.	4	5	5		
3.9	4.	Assessments (tests) of content followed the objectives or syllabus/outline	3	6	5		
4.0	5.	The instructor's expectations were reasonable.	4	6	4		
3.9	6.	Criteria for measuring achievement in the course were reasonable.	3	6	5		
3.9	7.	Your level of success met your expectations.	3	6	5		
3.9	8.	Your level of success met the expectations of the instructor.	3	6	5		
	9.	As a result of this course, you feel you have improved in:					
3.6		a. classroom management	1	5	5		
3.6		b. planning for instruction	1	5	5		
4.0		c. comprehension of mathematics	4	6	4		

Please comment or make recommendations about any of the items above if you wish. List the number of the item and your comment.

Item No.	Comment
3.	Excellent instructor.

ECIA Chapter 2 Assessment
Course Evaluation

The results of this survey will be used to design strategies for counseling teachers in the project and planning mini-seminars for staff development. We thank you for your cooperation.

Course Title Mathematics Methods for Secondary Mathematics Fall 1984.

AVERAGE RATING			Level of satisfaction: High Degree 5	4	3	2	Low Degree 1
2.5	1.	The instructor followed the course syllabus/outline in a reasonable fashion.	2	2	1	1	5
2.5	2.	The content material was presented in a manner which facilitated comprehension.	3	1	1		6
2.3	3.	The instructor's classroom manner facilitated the efforts of class members to succeed.	1	3		1	6
2.4	4.	Assessments (tests) of content followed the objectives or syllabus/outline	2	2		1	6
2.0	5.	The instructor's expectations were reasonable.	1	1	2		7
2.2	6.	Criteria for measuring achievement in the course were reasonable.	2	1	1		7
2.6	7.	Your level of success met your expectations.	2	2	2		5
2.5	8.	Your level of success met the expectations of the instructor.	2	2	1		6
	9.	As a result of this course, you feel you have improved in:					
2.3		a. classroom management	2		2		5
2.6		b. planning for instruction	2	2	2		5
2.2		c. comprehension of mathematics	1	1	2		5

Please comment or make recommendations about any of the items above if you wish. List the number of the item and your comment.

Item No.	Comment
9b.	This class was hampered by students who did not have sufficient background in mathematics. This created a hardship for students who knew math concepts.
9c.	We could have dealt more with higher level mathematics, such as, techniques for assisting students with geometric proofs, understanding logs and radicals.
7.	Did not meet my expectations or objectives; poor instructor. I felt that my classroom management, planning and comprehension were better than the course.
9.	The instructor should not be teaching a methods course.

ECIA 2 -85

COURSE EVALUATION

PLEASE COMPLETE THIS EVALUATION SO THAT WE CAN BETTER DESIGN FUTURE COURSES TO SERVICE THE NEEDS OF TEACHERS.

DATE: MAY 1985

Name: _____ School _____ Route # _____
(OPTIONAL)

Course Name Pre-Calculus/Trigonometry Instructor Kabir

USE A SCALE OF 1 TO 5 (1 = LOW; 5 = HIGH) TO RATE THE FOLLOWING:

AVERAGE RATING		
4.5	1.	HOW WELL THE COURSE MET YOUR EXPECTATIONS. COMMENTS:
4.5	2.	YOUR LEARNING OF SUBJECT MATTER. COMMENTS:
3	3.	USEFULNESS OF THE COURSE TO YOU FOR CLASSROOM APPLICATION. COMMENTS:
5	4.	CAPABILITY OF THE INSTRUCTOR. COMMENTS:
4.5	5.	YOUR MOTIVATION TO COMPLETE THE COURSE WORK. COMMENTS:
3.5	6.	POSITIVE CHANGE IN YOUR ATTITUDE ABOUT MATHEMATICS. COMMENTS:
3.5	7.	INCREASED FEELINGS OF COMPETENCE FOR TEACHING MATHEMATICS. COMMENTS:
	8.	WHAT WAS MOST HELPFUL TO YOU IN THE COURSE? The care the instructor took in understanding and explaining the things we had problems with.
	9.	WHAT WAS LEAST HELPFUL TO YOU IN THE COURSE? We did not get enough working time to do newly explained problems in class.
	10.	ANY OTHER COMMENTS ABOUT THE COURSE? COMMENTS: - The time from February to May is just too long for this class. - I think Mr. Kabir is an exceptional educator because of his knowledge of the course matter and the care he delineates to the students.

Responses: 2

COURSE EVALUATION

PLEASE COMPLETE THIS EVALUATION SO THAT WE CAN BETTER DESIGN FUTURE COURSES TO SERVICE THE NEEDS OF TEACHERS.

DATE: MAY 1985

Name: _____ School _____ Route # _____
(OPTIONAL)

Course Name Advanced Calculus Instructor Steadman

USE A SCALE OF 1 TO 5 (1 = LOW; 5 = HIGH) TO RATE THE FOLLOWING:

AVERAGE RATING

4.6 1. HOW WELL THE COURSE MET YOUR EXPECTATIONS.
COMMENTS:

4 2. YOUR LEARNING OF SUBJECT MATTER.
COMMENTS: I did not do as well as I should have - This course will never be a part of the high school curriculum. Therefore it does not seem necessary.

2.8 3. USEFULNESS OF THE COURSE TO YOU FOR CLASSROOM APPLICATION.
COMMENTS:

5 4. CAPABILITY OF THE INSTRUCTOR.
COMMENTS: Excellent

4.6 5. YOUR MOTIVATION TO COMPLETE THE COURSE WORK.
COMMENTS: But - I have been overworked on my job, which had an effect on my two courses.

4 6. POSITIVE CHANGE IN YOUR ATTITUDE ABOUT MATHEMATICS.
COMMENTS: I wish to seek more advanced courses in mathematics - My attitude about mathematics has always been positive. This course could have made my attitude a little negative.

4.75 7. INCREASED FEELINGS OF COMPETENCE FOR TEACHING MATHEMATICS.
COMMENTS: I feel I need more review and other courses.

8. WHAT WAS MOST HELPFUL TO YOU IN THE COURSE?
Everything was helpful to me in that it helped to increase my competence for teaching mathematics. - Reviewing concepts learned years ago. - Thinking calculus again. - The section on mathematical induction. - a broader view of higher math.

9. WHAT WAS LEAST HELPFUL TO YOU IN THE COURSE?

10. ANY OTHER COMMENTS ABOUT THE COURSE?
COMMENTS: The time should not have been changed from 4:00 p.m. to 6:00 p.m. for a 3 hour course for 10 weeks. Most 3 hour courses are based on that time frame so professionals can take other courses after that time. - Mrs. Steadman did a marvelous job, as usual, in working with the students.

Responses: 5

APPENDIX M

SUMMARY OF COURSE PARTICIPATION FOR CERTIFICATION

SUMMARY OF COURSE PARTICIPATION SY 1984-85

		Basic Algebra	Basic Geometry	Prog'g I/		Pre-Cal/		Calculus I	Calculus II		Calculus III	Advanced Calculus	Different Equations	Linear Algebra	Modern Geometry	Probability-Statistics	Computer Science		Mathematical Methods										
[redacted]llen, Charles	✓									x		x			x													
Alvarez, Celestine	✓											x	x						x									
[redacted]wers, Tina												x																
Bowman, Jane	✓											x	x															
[redacted]axton, Barbara	✓											x	x		x				x									
[redacted]iscoe, Shirley				x																								
[redacted]rookins, Adolphus	✓											x	x						x									
[redacted]own, Orrin				x																								
Francis, Johnny	✓											x	x						x									
[redacted]odknight, Patricia												x	x															
Graves, Bonnie	✓											x	x		x				x									
[redacted]nton, Rosalind	✓									x					x				x									
Holliday, Bettie				x																								
[redacted]ng, V. Lois	✓											x	x		x				x									
McLeod, Laura				x																								
[redacted]ss, Dorothy	✓											x	x		x				x									
[redacted]uldrow, Delores												x	x															
[redacted]rray, Joseph												x	x															
[redacted]wsome, Marcus	✓								x	x									x									
Pinckney, Diane	✓											x	x						x									
[redacted]ong, Elizabeth	✓							x			x		x						x									
Proctor, Loretta	✓										x	x	x		x													
[redacted]Richmond, Pedro												x	x															
Robinson, James	✓											x	x		x				x									
[redacted]West, Patricia												x	x															
White, Jacqueline	✓							x	x			x			x				x									
[redacted]Wood, Jesse	✓							x	x										x									
Young, Barbara												x							x									
[redacted]Cohen, Franklyn												x			x													
Jackson, JoAnn	✓								x			x	x															
[redacted]Wise, Betty	✓			x																								

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APPENDIX N

A CHART OF STAFF DEVELOPMENT ACTIVITIES FOR 1985

MATH ANGLES

DISTRICT OF COLUMBIA PUBLIC SCHOOLS

Mathematics Department

MAY-JUNE 1985

NEW DIRECTION FOR HIGH SCHOOL MATHEMATICS

"Mathematics is too important today to the average citizen who must deal with numerical information and for the person who must use mathematical techniques on the job for us to allow them to lack sufficient mathematical know-how," according to THE SECONDARY SCHOOL MATHEMATICS CURRICULUM, ...1985 Yearbook of the National Council of Teachers of Mathematics. This yearbook is the first major statement made in several decades by the profession about the secondary school mathematics curriculum, except for the Council's AGENDA FOR ACTION: RECOMMENDATIONS FOR SCHOOL MATHEMATICS OF THE 1980s.

Recently, a multitude of reports and studies offering recommendations for school improvement have been released, and one area of particular concern cited in these reports as a target of reform is mathematics. These reports, like the AGENDA FOR ACTION, underscored the necessity for restructuring the mathematics curriculum to better meet the needs of a diverse student population in a society dominated by technology. However, the reports in general provide little substantive detail about curriculum content and its organization.

The 1985 Yearbook attempts to chart new curricular directions for high school mathematics in terms of content, organization, and priorities and also provides descriptions of promising practices worthy of study and emulation.

This volume is organized into five parts. Part 1 establishes both a historical perspective and a rationale for needed curricular reform and provides a framework for viewing the secondary school mathematics within the broader social and educational context.

Several chapters in Part 2 focus on new mathematics content and modes of mathematical thought that are supportive of the shifts in the uses of mathematics in society. Particular attention is given to reshaping the curriculum in response to computer technology.

Continued on page 2

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Continued from page 1

NEW DIRECTION FOR HIGH SCHOOL MATHEMATICS

Part 3 looks at innovative courses and describes an exemplary course in geometry that effectively integrates several approaches to the subject, an evolutionary course in advanced algebra with a focus on problem solving, and a unique alternative course for college-bound seniors who have had only marginal success in previous college preparatory courses.

Included in Part 4 are three alternative structures for meeting the particular needs of the mathematically gifted. Part 5 features descriptions of innovative three- and four-year programs that exemplify many of the general recommendations of the educational reports of the 1980s.

The material in this yearbook suggests an exciting and important period of curricular innovation ahead, quite in contrast to the bleak outlook of the 1983 report of the National Commission on Excellence in Education, which concluded that "the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a nation and as a people."

The 1985 Yearbook is available from the NCTM Headquarters Office for $14.50 a copy (prepaid; ISBN 0-87353-217-1). Press copies are available on request.

Contact: NCTM
Betty A. Rollins
620-9840

0 0 0 0

Don't miss these opportunities to sharpen your skills!
Get a JUMP on preparing for the new school year!

See "Summer 1985" and "Fall 1985" articles.

KUDOS!!

Four D.C. mathematics teachers were recognized at a recent honors conference at George Washington University.

At the conference, designed to encourage quality teaching of math in elementary and secondary schools, the teachers heard an address by mathematician Hassler Whitney of the Institute for Advanced Study at Princeton.

Honored were Sister Joan Annette of All Saints High; Wayne Straight of Saint Anthony Elementary; Jacqueline Goodloe of Burrville Elementary, and Karin Wingfield of Ballou High.

• •

Note

Elementary Mathematics Resource Teachers

Teachers who wish to receive a copy of the notes from the departmental meeting on long division should send in the request on 3 x 5 cards to:

Mathematics Department
Instructional Services Center
Langdon Elementary School
Route Number 3

Please list your name, school, and route number.

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Summer 1985

Probability and Statistics - This course is designed to assist teachers with the introduction of probability concepts such as probability space, random variables, independence, and distribution. Basic concepts of statistics such as estimation, histograms, standard deviation, and sampling will also be included.

Prerequisites:	Knowledge of Algebra	Site: ISC - Langdon
Eligibility:	All mathematics teachers	Hours 9:00 A.M. - 1:00 P.M.
Credits:	Three (3) inservice/graduate	Dates: July 8 - 25, 1985 (Monday-Thursday)

LOGO Application: Integrating into the Curriculum - In this course, teachers will identify educational applications of LOGO. Participants will develop activities and lesson plans using LOGO to teach problem solving and analytical skills. Emphasis will be placed on developing programs, correlating the use of LOGO with objectives from the curriculum, and integrating LOGO into the existing curriculum.

Prerequisites:	Introductory course in LOGO	Site: ISC - Langdon
Eligibility:	Secondary Mathematics teachers (Junior High School preferred)	Hours: 8:30 A.M. - 1:00 P.M. Dates: July 1, 2, 3, 8, 9, 10, 11, 1985
Credits:	Two (2) inservice/graduate	

Introduction to Computer Science I (PASCAL) - This course is designed to prepare participants to teach the first year computer science program on the senior high school level. PASCAL is a high-level, structured language which has features that ensure good programming design, program portability, correctness, modifiability, and ease of program construction and program maintenance.

Prerequisites:	Introductory Computer Literacy course	Site: TBA
Eligibility:	(Senior High School teachers preferred)	Hours: 9:00 A.M. -12:00 Noon Dates: July 1 - August 2, 1985 Monday - Thursday)
Credits:	Three (3) inservice	

Fall 1985

Strategies for Teaching Elementary Algebra - Participants in this course will explore different philosophies underlying the teaching of mathematics. They will also be introduced to various techniques, approaches and methods which facilitate the creation of an environment which is more conducive to the development of an appreciation for and the learning of mathematics. Emphasis will be placed on relevant research, higher-order cognitive skills, creativity, and individual difference.

Prerequisites:	None	Site: Georgetown University
Eligibility:	9th grade teachers	Hours: 4:15 P.M. - 6:45 P.M.
Credits:	Three (3) graduate	Dates: September 24 - December 1, 1985 (Tuesdays)

Fall 1985 (Continued)

Applying Research in Elementary School Mathematics - This course is based on a research-guided response to the concerns about such topics as bridging from concrete to abstract, manipulations, motivation, algorithms, and problem-solving. Participants will be required to make presentations at the local school to enhance its staff development program.

Prerequisites:	None	Site:	ISC - Langdon
Eligibility:	Elementary personnel	Hours:	2:30 P.M. - 4:30 P.M.
Credits:	Two (2) inservice/graduate	Dates:	3rd Tuesday September 17, 1985- June 16, 1986

Applying Research in Secondary School Mathematics - Participants will engage in a review and discussion of topics identified as major concerns of educators. These topics will include remediation on the secondary level, individual differences, problem solving, using the calculator, and strategies for teaching algebra and geometry. Participants will prepare inservice sessions for the local school staffs.

Prerequisites:	None	Site:	ISC - Langdon
Eligibility:	Middle school, secondary school personnel	Hours:	3:35 P.M. - 5:45 P.M.
		Dates:	4th Tuesday September 24, 1985-
Credtis:	Two (2) inservice/graduate		June 21, 1986

Diagnostic/Prescriptive Teaching - Participants will receive instruction in practical applications of diagnostic and prescriptive techniques in providing appropriate reading and mathematics instruction and in selecting and using appropriate materials. Emphasis will be on construction of informal tests; administration, scoring, interpreting and using informal and standardized tests; study and evaluation of materials and teaching procedures; and the case study procedure. In addition to the classroom experiences, a guided practicum is required.

Prerequisites:	None	Site:	ISC - Langdon
Eligibility:	SSPP Support/Transition Teachers	Hours:	4:00 P.M. - 6:00 P.M.
		Dates:	Thursdays
Credits:	Three (3) inservice		September 5, 1985- December 19, 1985

Effective Training Series

Managing Behavior in the Classroom - This course is designed to assist teachers in acquiring diagnostic, organizational and interpersonal skills which will facilitate classroom management. Participants will facilitate classroom management. Participants will experience self-diagnostic activities, practicum exercises, and working with a support system.

Prerequisites:	None	Site:	ISC - Langdon
Eligibility:	All classroom teachers	Hours:	Opening sessions August 26, 27, 1985 8:30 A.M. - 12:30 P.M.
Credits:	One (1) inservice	Dates:	Opening sessions August 26, 27, 1985 Thursday - September 12, 1985- November 14, 1985

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Effective Teaching Series

Fall 1985 (Continued)

Planning for Effective Instruction - Teachers will review the educational philosophies underlying the planning strategy. Emphasis will be placed on preparation to implement a year long program of instruction in one subject.

Prerequisites:	None	Site:	ISC - Langdon
Eligibility:	All classroom teachers	Hours:	3:35 P.M. - 6:15 P.M.
Credits:	One (1) inservice	Dates:	Mondays September 9, 1985- October 21, 1985

Varying Teaching Styles - The principle model introduced in this course will be Hanson/Silver and Associates model derived from the Jung philosophy. Teachers will be able to diagnose styles and prescribe strategies to be implemented. Implementation of strategies will be a key component of the course.

Prerequisites:	None	Site:	ISC - Langdon
Eligibility:	All classroom teachers	Hours:	3:45 P.M. - 6:15 P.M.
Credits:	One (1) inservice	Date:	Mondays October 28, 1985- December 9, 1985

Creative Problem Solving - Teachers will be introduced to several approaches to classifying thinking skills, metacognition, and requisite practices for promoting the development of creativity in students. Emphasis will be placed on practicum exercises.

Prerequisites:	None	Site:	ISC - Langdon
Eligibility:	All classroom teachers	Hours:	3:45 P.M. - 6:15 P.M.
Credits:	One (1) inservice	Dates:	Mondays January 6, 1986- February 10, 1986

* * * * * * * * * * * * * * * * * *

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Dates to Remember

Summer Opportunities

Project YES

Position(s): Instructors
Mathematics (2)
Computers (2)

Dates: June 25, 1985 to July 29, 1985

Eligibility: Baccalaureate degree in those fields

Apply: (202) 282-2115
Updated resume needed
Office for Pre-college Programs
Building 38, Room 105
4200 Conn. Avenue, N.W.
Washington, D.C. 20008

Mathematics Department Staff 576-7816

Gordon Lewis - Supervising Director
Vivian Carson - Assistant Director
Gwendolyn Means - Assistant Director
Joyce Nurse - Secretary

Mathematics Department
Instructional Services Center
Route 3

Fall Opportunities

Super Saturday Project Yes

Position(s): Instructors
Mathematics
Computers

Dates: September 1985 - April 1986
(12 Saturdays)

Eligibility: Baccalaureate degree

Apply: See Summer Announcement
June 14, 1985 deadline

MATH CENTER

Position(s): Internship

6 elementary, 6 jobs, 6 recertification credits

Dates: June 22 - August 2, 1985

Eligibility: Teaching certificate

Apply: 363-3779
Summer Program
3752 Oliver Street, N.W.
Washington, D.C. 20015

244-6853
Math Center
3311 Macomb Street, N.W.
Washington, D.C. 20008

APPENDIX O

"STRATEGIES FOR EFFECTIVE TEACHING" OUTLINE

Course Outline

Course Title: Strategies for Effective Teaching

Credits: One (1) for each two segments (6 hrs. @) plus evaluation session (3 hrs.)

Course Sessions:

Segment 1	Planning for Mastery	Monday 2/11, 2/25, 3/4
Segment 2	Varying Teaching Styles	Monday 3/11, 3/18, 4/1
Segment 3	Classroom Management	Wednesday 2/13, 2/20,2/27
Segment 4	Creative Problem Solving	Wednesday 3/6, 3/13/3/20
Evaluation	Segments 1 and 2	Monday 4/15/85
	Segments 3 and 4	Wednsday 4/3/85

Segments 3:45 - 5:45 P.M.
Evaluation 3:45 - 6:15 P.M.

Total Number of Hours: Fifteen (15) clock hrs. per/credit

Instructor: Gwendolyn B. Means, B.S., M.Ed., Ed.D.

Course Description: This course is organized into four segments. Participants may select any two segments which best meet their professional development needs. Each segment will introduce teachers to the educational philosopy underlying its principle model. Emphasis will be placed on the preparation of teachers for implementation of the models in the classroom. Full attention will be given to the advantages of each strategy and constraints that may exist.

Course Objectives: Upon completion of each segment, particpants will be able to:

a) Interpret the principle model/philosophy.
b) Organize a lesson plan based on the model.
c) Evaluate the implementation of a plan of instruction in terms of the model.

Instructional Materials

Reading:

Block, J.H. and Anderson, L.W. Mastery Learning in Classroom Instruction. New York; Macmillan Publishing Co., Inc., 1975.

Merrill, M.D. and Tennyson, R.D. Teaching Concepts: An Instructional Design Guide. Englewood Cliffs, N.J.: Educational Technology Publications, 1977.

Hoover, K.H. The Professional Teacher's Handbook: A Guide for Improving Instruction in Today's Middle and Secondary Schools. Boston: Allyn and Bacon, Inc., 1977.

Hills, J.R. Measurement and Evaluation in the Classroom. Columbus, Ohio: Charles E. Merrill Publishing Co., 1976.

Silver, H.F. and Hanson, J.R. Teaching Styles and Strategies: Techniques for Meeting the Diverse Needs and Styles of Learners Moorestown, N.J.: Hanson, Silver and Associates, Inc., 1982.

Bruner, J. The Process of Education. Cambridge, Mass.: Harvard University Press, 1977.

Milone, M.N. An Introduction to Modality - Based Instruction. Columbus, Ohio: Zaner - Bloser, Inc., 1981.

Frieberg, H.J. (Director) Consistency Management. Houston, Tex.: University of Houston (Teach Corps'78), 1980.

_____. Successful Motivation Strategies. Phoenix, Ariz.: Teaching Institute of Continuing Education, 1982.

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National Education Association
"Discipline and Motivation: A Genuine Partership"
"Classroom Group Management"
"The Teacher's Role in Student Motivation"
"Creativity: A Role Of Learning"
"Creativity: A Way of Learning"
"How Teachers Can Work with Learning Disabled Students"

SVE/Singer

"Behavior Modification: The Habit Breaker"
"Teaching with Media"

J.C. Penney

"Your Space and Mine"

Segment/Session	Focus	Assessment Activity
Planning for Mastery #1	Philosophy/Chicago Model Table of Specifications (Planning)	Table of Specifications Teaching/Learning Unit
Planning for Mastery #2	Concept Attainment Assessment Tasks	Lesson Plan
Planning for Mastery #3	Matching Test Items/ Objectives/ Correctives	Unit Test/Correctives
Evaluation	Implementation of Plan	Evaluation Report
Teaching Styles #1	Defining Modalities/Two Philosophies (Jung and Dunn)	
	Self-analysis	Teacher Profile
Teaching Styles #2	Implications for Students' Preferences	
	Designing a Teaching Pattern	Class Profile Teaching Pattern
Teaching Styles #3	TLC Strategies (5)	Lesson Plan (1)
Evaluation	Implementation of Plan	Evaluation Report
Classroom Management #1	Defining Management in the Classroom	
	Philosophy of Consistency	Outline of Management Plan
Classroom Management #2	Analyzing Teacher Behaviors	Self-analysis
	Non-Verbal Communications	Class Response Analysis
Classroom Management #3	Organizing the Physical Environment	Outline of "Next Steps"
Evaluation	Implementation of Plan	Evaluation Report
Creative Problem Solving #1	Levels of Development (Piaget, et al) Three Classes of Thinking Skills	Tentative Outline of Skills
Creative Problem Solving #2	What Is Creativity	
	Risk Taking	Analysis of Currents Teaching Activities
Creative Problem Solving #3	Strategies for Promoting	
	Creativity/Problem Solving	Lesson Plan
Evaluation	Implementation of Plan	Evaluation Report

Course Requirements:

Attendance at all sessions.
Participation in all class activities.
Assessment activities must be organized and submitted according to the guidelines designated in class.

Evaluation:

Participant will be assessed as satisfactory upon the completion of all course requirements.

APPENDIX P

FEEDBACK SURVEY FOR STAFF DEVELOPMENT COURSES

FEEDBACK SURVEY FOR PLANNING FOR MASTERY, VARYING TEACHING STYLES, CREATIVE PROBLEM SOLVING, AND CLASSROOM MANAGEMENT.

Instructions: Please rate each of the following items by circling a number from 5 to 1, with the highest rating to the left.

1. The manner in which the information was presented was:

Exciting 5	4	3	2	Dull 1
8 (50%)	8 (50%)			

2. The clarity of the presentation was:

Very Clear 5	4	3	2	Very Unclear 1
6 (38%)	8 (56%)	1(6%)		

3. The value of the course to me was:

Extremely Useful 5	4	3	2	Practically Useless 1
8 (50%)	6 (38%)	2 (13%)		

4. The courses brought about, maintained, or increased my interest in the topic:

Very Much 5	4	3	2	Not At All 1
9 (56%)	5 (31%)	2 (13%)		

5. The course objectives were met:

Very Much 5	4	3	2	Not At All 1
11 (69%)	5 (31%)			

6. As a result of this course how satisfied are you with your improvement in:

	High Degree 5	4	3	2	Low Degree 1
a. classroom management	6 (40%)	8 (53%)	1(7%)		
b. planning for instruction	8 (57%)	4 (29%)	2(14%)		
c. comprehension of mathematics	2 (18%)	2 (18%)	7(64%)		

7. Please list any other areas in which you would like further staff development courses.

WEBBING AS AN INSTRUCTIONAL TOOL
SENTENCE WRITING FOR SPECIAL STUDENTS
SEMESTER COURSE (PLANNING FOR MASTERY)

Prepared by
Division of Quality Assurance

032785.DQACh.2

APPENDIX Q

MATHEMATICS TEACHER NEEDS SURVEY

MATHEMATICS TEACHER NEEDS SURVEY

Name: SUMMARY June 1984 School: _____

PLEASE CHECK WHICH OF THE FOLLOWING ENRICHMENT SEMINARS YOU WOULD PARTICIPATE IN IF PROVIDED NEXT YEAR FOR INSERVICE CREDITS:

H	SH	T	
15	11	26	1. New ways to look at Algebra and Geometry: Functions and Graphs
20	16	36	2. Computers and the Mathematics Curriculum
	1	4	3. Mathematical Systems
10	3	13	4. Problem-solving:Rational and Irrational
	5	20	5. Higher mathematics concepts to enhance lower level curriculum
12	6	18	6. Motivating higher level cognitive skills
	7	17	7. Identifying and Utilizing mathematics resources in the community
11	7	18	8. Connecting mathematics with other subject area curricula and people
	2	9	9. Deduction and Induction: a way of thinking
7	3	10	10. Number Sequences: "I Love A Mystery"
	5	12	11. Symmetry, Art, and Geometry
2	1	3	12. Mathematical Curves are not dangerous
7	4	11	13. Mathematics of Chance : Living Lottery
	6	13	14. Statistics and the Classroom
4	5	9	15. Topology Topics
	4	9	16. Geometry- Linkages between Euclid and others
10	7	17	17. Student Learning Teams: John Hopkins Model
	10	20	18. Creative Calculus Concepts
			19. _____
			20. _____

WOULD YOU BE WILLING TO CONDUCT ANY OF THESE SEMINARS? ____

If so, which ones?

a. _____

b. _____

c. _____

d. _____

IF YOU PARTICIPATED IN ANY OF A SERIES OF INSERVICE MATHEMATICS ENRICHMENT SEMINARS NEXT YEAR, WHICH OF THE FOLLOWING TIMES WOULD YOU PREFER? (Please check!!)

34 1. after school 3:30 - 5:30 p.m

24 2. saturdays 9:30- 11:30 a.m.

7 3. other _____

Please return this survey form to either your department chairperson or to

MATHEMATICS DEPARTMENT
LANGDON SCHOOL, INSTRUCTIONAL SERVICES CENTER

IMMEDIATELY, PLEASE!!

Route # 3 (clerical services) - Fold form, write name on reverse side, and mail.

THANKS !!! YOU WILL BE HEARING MORE FROM US!!!!